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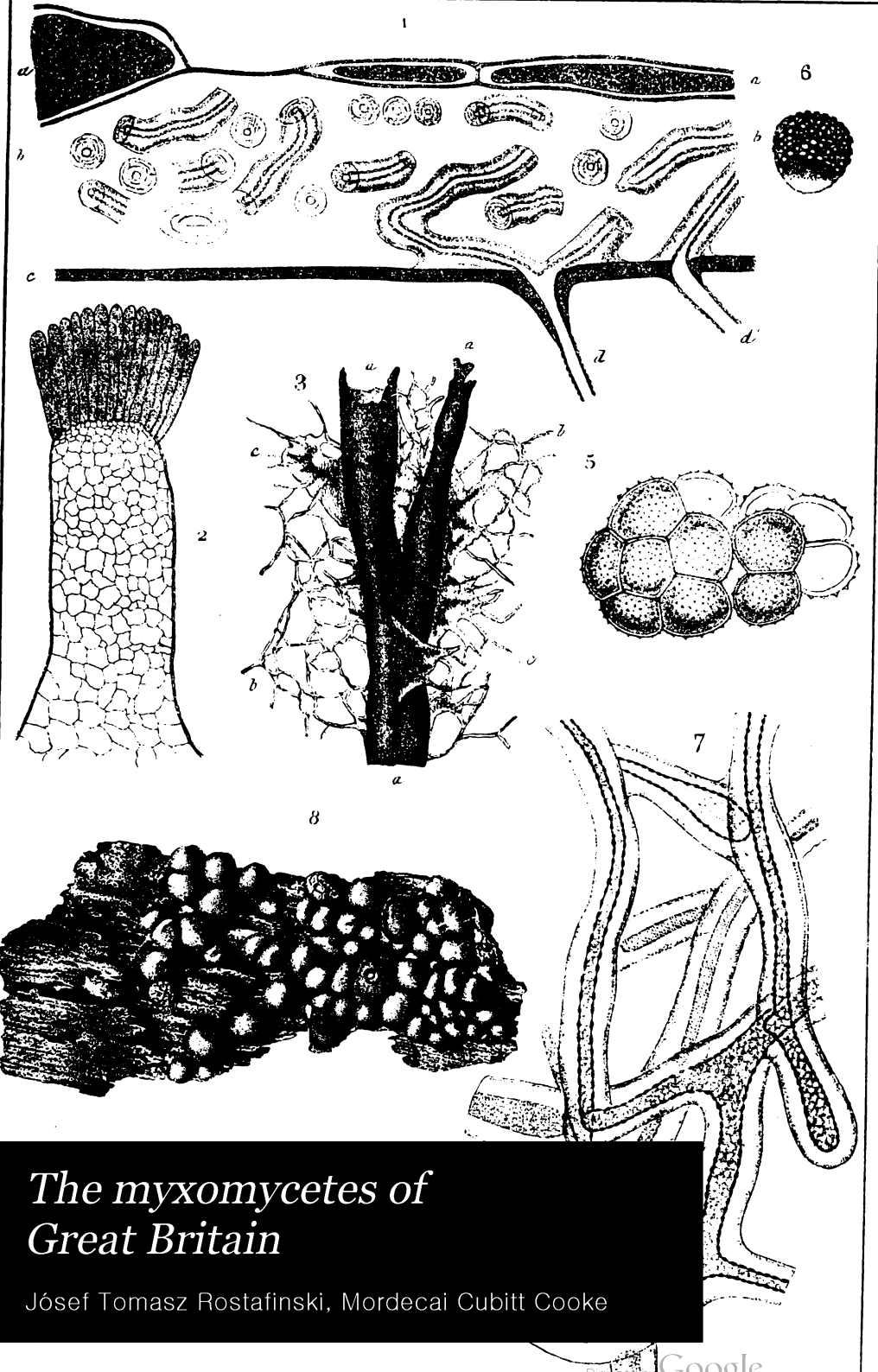

The myxomycetes of Great Britain

Jósef Tomasz Rostafinski, Mordecai Cubitt Cooke

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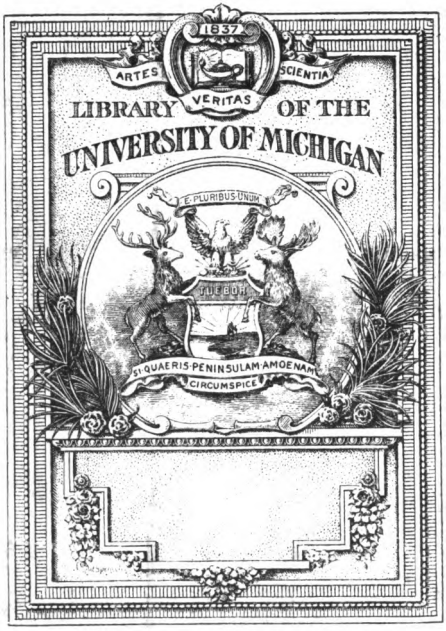

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Mycologia Britannica.

THE

MYXOMYCETES

OF

GREAT BRITAIN.

Arranged according to the Method of Rostafinski.

The Characters of all the Orders, Families and Genera, with descriptions of the British Species and original Analytical Tables, translated from the Polish, by

M. C. COOKE.

Illustrated by Twenty-four Plates.

LONDON:

WILLIAMS AND NORGATE,

HENRIETTA STREET, COVENT GARDEN, AND
SOUTH FREDERICK STREET, EDINBURGH.

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MYXOMYCETES
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GREAT BRITAIN.

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INTRODUCTION.

For half a century the *Myxomycetes* have been classified on the basis of external characters alone, or such only as could be discerned by the aid of a pocket lens. In one or two instances an additional genus has been constituted in which some prominence was given to characters determined by the aid of the microscope, as for instance in the genus *Badhamia* proposed by Berkeley in 1851, but the general feature of the classification was one of external characteristics. The advance of Microscopy left behind such an incomplete system for many years, and at length Professor de Bary turned his attention to the subject but made no definite propositions for a rectification of the classification, until in 1873 his pupil at Strasburg, Dr. Joseph Rostafinski, published in an inaugural address the outlines of a system of classification, based on new principles. In 1875, the more elaborate, and detailed "Monografia Sluzowce" expanded and illustrated his views in a complete and almost exhaustive manner. This work being, unfortunately, printed in the Polish language, and most difficult to obtain through the ordinary channels of trade, it appeared advisable to present to English readers as much of it as referred to British species in a more familiar language, and hence the present work.

At first Rostafinski recognized in the "Mycetozoa," as he termed them, two primary divisions, in one of which the spores were developed externally, on the surface of certain definite spore-bearers, and in the other they were developed internally, covered at first by a protective membrane or sporangium. In

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the monograph only a passing notice is given of the first division, and in the more recent "supplement" it is not mentioned at all. The inference to be deduced from this is that the Exosporous Mycetozoa are regarded as an encumbrance to the system, and are intended to be ignored.

The Mycetozoa proper being thus reduced to unity, our illustrations will be understood to refer to these alone. As in the *Agaricini*, so in the *Myxomycetes* the first steps in classification, relate to the colour of the spores. Two sections include the species (1) with violet spores, and (2) those having spores otherwise coloured. The *Amaurosporæ* and the *Lamprosporæ* are the two primary sections, each of which is subsequently again divided into two subsections, in one of which no evident capillitium is present, and in the other some kind of capillitium is always developed.

A careful comparison of the analytical key, and the fuller description of the orders, families and genera, which are all reproduced in the following pages, will enable the student readily to master the distinctive features of the details of the system.

As the old method was based wholly on external features, so the new has nearly all its essential characteristics relating to internal structure. If there is any one feature in which the Rostafinski method is more assailable than another it is the too slight regard which is given to external features. Naturally enough, in escaping from one extreme, the rebound has been to the other. Time and experience will undoubtedly hereafter develop a "happy medium."

In making use of this system the first determination requisite is the colour of the spores, then the presence or absence of a capillitium, and finally the character of the capillitium, when present, in all its details. Undoubtedly the leading idea of the

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classification is the capillitium, or the capillitium and columella, and this should be borne in mind in any attempt which is made to master the details of the scheme.

The negative features of the method are important to remember in the transition from one system to another. The form of the sporangium must not be relied upon to the fullest extent of the old system ; and, especially in some genera, the presence or absence of a stem is to be regarded as of little moment. Above all, *colour*, as exhibited in sporangium or stem, must be held as wholly untrustworthy, and this extends equally to the capillitium and spores in the *Lamprosporæ*.

Some disappointment will probably be felt at seeing so many old friends, formerly designated by distinct names, and each supposed to possess an individuality of its own, all thrown together in such species as *Didymium farinaceum* and *Trichia fragilis*. And again, on the other hand, that such minute differences, which require both faith and practice to appreciate, should separate *Trichia affinis* from *Trichia chrysosperma*. These applications of the system, however, do not vitiate the system itself, which undoubtedly must be accepted as a great and thorough reform of the classification of the *Myxomycetes*.

It is unnecessary to attempt any controversion of the proposition once made, but soon ignored, that these organisms are more intimately related to animals than plants. Although the proposed name of *Mycetozoa* is still retained by Rostafinski, it is entirely divested of any insinuation in the direction of *Infusoria*, or *Rhizopoda*. It is just because of the misinterpretation to which *Mycetozoa* is liable that the preference has been given to *Myxomycetes* as the title of this work.

Finally, as to the present "contribution," I may not have succeeded in producing a very elegant, but at least I believe a

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faithful translation of such portions of Dr. Rostafinski's monograph as concern British species. The synonyms have not been compared or verified, but are given on authority of the monograph. The plates reproduced from the same work, have the original numbers still attached to them, so that any quotation of figures in the monograph will correspond. The last plate is composed of additional figures of my own. The early portion was already printed before the "Supplement" to the "Monograph" reached me, which necessitated an appendix in which all corrections and additions are made.

It is hoped that this revision and re-arrangement of a small portion of the "Handbook" will be so received by British Mycologists as to induce me to proceed with other portions, which are equally in need of revision.

M. C. COOKE.

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MYXOMYCETES.

Myxomycetes. *Wallr.* (1833.) *Fl.* Crypt., ii., 333.

Myxogastres. *Fries.* (1829.) Sys. Myc., iii., 67.

Myxogasteres. *Endl.* (1836.) Gen., p. 25. Bonorden Hdbk., p. 210.

Mycetozoa. *De Bary.* Mycet. (1861.) Rostafinski Mon., p. 83 (1875.)

When young, naked, mobile, in consequence of which the masses of plasmodium have a changing form. These masses at the time of fructification sometimes dividing themselves into single parts, are transformed into motionless fruits. Fruit either irregular in form (*plasmodiocarp*) or regular (*sporangium*). Sporangia, through fusion and union, produce, now and then, compound fruits (*Æthalium*). Æthalium usually of considerable dimensions, of regular or irregular form, naked, or covered with a common coat (*cortex*). Spores produced within the fruit through free-cell formation, or on the surface through division. The contents of spores at the time of germination, give rise to either at first a naked zoospore provided with a nucleus, a cramped vacuole, and long cilia, or to an amæboid. These zoospores, or amæbæ, flowing together in masses, give rise to mobile plasmodia.—*Rstfki. Mon.*, p. 83.

The above diagnosis is translated literally, in order to avoid any misconstruction which a freer rendering might induce.

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SYNOPSIS OF ORDERS, FAMILIES, AND GENERA IN ROSTAFINSKI'S MONOGRAPH.

Division I. EXOSPOREÆ.

Division II. ENDOSPOREÆ.

Sub-Division I. **AMAUROSPOREÆ.**

Spores violet, or brownish-violet.

Sect. A. *ATRICHÆ.*

Sporangia without a capillitium.

Order I. PROTODERMEÆ.

Family 1. Protodermaceæ.

Genus 1. *Protoderma.*

Sect. B. *TRICHOPHORÆ.*

Sporangia constantly possessed of a capillitium.

Order II. CALCAREÆ.

Family 2. Cienkowskiaceæ.

Genus 2. *Cienkowskia.*

Family 3. Physaraceæ.

Genus 3. *Physarum.*
„ 4. *Craterium.*
„ 5. *Crateriachea.*
„ 6. *Tilmadoche.*
„ 7. *Leocarpus.*
„ 8. *Fuligo.*
„ 9. *Trichamphora.*
„ 10. *Badhamia.*
„ 11. *Scyphium.*

Family 4. Didymiaceæ.

Genus 12. *Didymium.*
„ 13. *Chondrioderma.*
„ 14. *Lepidoderma.*

Family 5. Spumariaceæ.

Genus 15. *Diachæa.*
„ 16. *Spumaria.*

Order III. AMAUROCHÆTEÆ.

Family 6. Stemonitaceæ.

Genus 17. *Stemonitis.*
„ 18. *Comatricha.*
„ 19. *Lamproderma.*

Family 7. Enerthenemaceæ.

Genus 20. *Enerthenema.*

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Family 8. AMAUROCHETACEÆ.
Genus 21. *Amaurochæte.*
Family 9. BREFELDIACEÆ.
Genus 22. *Brefeldia.*
Family 10. ECHINOSTELIACEÆ.
Genus 23. *Echinostelium.*

SUB-DIVISION II. **LAMPROSPORÆ.**
Spores diversely coloured, never violet.

Sect. A. *ATRICHÆ.*
Sporangia without a capillitium.

ORDER IV. ANEMEÆ.
Family 11. DICTYOSTELIACEÆ.
Genus 24. *Dictyostelium.*
Family 12. LICEACEÆ.
Genus 25. *Licea.*
„ 26. *Tubulina.*
„ 27. *Lindbladia.*
Family 13. CLATHROPTYCHIACEÆ.
Genus 28. *Clathroptychium.*
„ 29. *Enteridium.*

ORDER V. HETERODERMEÆ.
Family 14. CRIBRARIACEÆ.
Genus 30. *Dictydium.*
„ 31. *Heterodictyon.*
„ 32. *Cribraria.*

Sect. B. *TRICHOPHORÆ.*
Sporangia constantly possessed of a capillitium.

ORDER VI. RETICULARIÆ.
Family 15. RETICULARIACEÆ.
Genus 33. *Reticularia.*

ORDER VII. CALONEMEÆ.
Family 16. TRICHIACEÆ.
Genus 34. *Trichia.*
„ 35. *Hemiarcyria.*
Family 17. ARCYRIACEÆ.
Genus 36. *Arcyria.*
„ 37. *Lachnobolus.*
„ 38. *Dermodium.*
„ 39. *Lycogala.*
„ 40. *Cornuvia.*
„ 41. *Oliyonema.*
Family 18. PERICHÆNACEÆ.
Genus 42. *Perichæna.*

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ANALYTICAL KEY FOR THE DETERMINATION OF THE GENERA.

1.	Spores outside the sporangium or æthalium (*Exosporæ*)	2
	Spores inside the sporangium or æthalium (*Endosporæ*)	3
2.	Sporangia grown together into a dendritic or branched form, or into a net with polygonal openings	*Ceratium.*
3.	Spores violet, or brownish-violet colour (*Amaurosporæ*)	4
	Spores otherwise coloured, mostly of bright colour (*Lamprosporæ*)	32
4.	Without capillitium (*Atrichæ*)	5
	With capillitium (*Trichophoræ*) . . .	7
5.	Sporangium single (*Protodermeæ*) . .	6
6.	Wall of sporangium single	*Protoderma.*
7.	Deposits of lime on the surface, or outside the sporangium or æthalium (*Calcareæ*)	8
	Sporangium or æthalium without deposits of lime (*Amaurochetæ*)	21
8.	Capillitium of coloured threads combined into a network, some of the branches with free extremities (*Cienkowskiaceæ*) . .	9
	Capillitium of thin-walled, colourless, translucent tubes, usually combined into an irregular network, expanded and wider at the angles, not usually developed into, or replaced by, a central knot, or "columella" (*Physaraceæ*)	10
	Capillitium of very thin threads, or more rarely of sparse tubes, usually violet, or more rarely colourless, simple, or combined by transverse branches into a network, without deposits of lime. Columella usually strongly developed (*Didymiaceæ*) . .	19
	Sporangium cylindrical, obtuse, simple or combined into tree-like branches. Æthalium also cylindrical, with a central columella. Capillitium of violet threads without lime, combined into a network (*Spumariaceæ*)	20
9.	Free ends of capillitium attenuated, grains of lime very strongly developed, and usually branched	*Cienkowskia.*
10.	Sporangium single	11
	Sporangia combined into an entangled plait (æthalium)	*Fuligo.*

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11. Deposits of lime only on the surface of the Sporangium. Capillitium without lime, its tubes filled with air 12
Deposits of lime also contained within the sporangium, tubes of capillitium filled wholly or partly by lime 13
12. Tubes of capillitium wide, rarely combined by transverse branches into a network, both ends attached, and generally of equal thickness throughout their length . . *Trichamphora.*
13. Whole network of tubes of the capillitium filled up by lime 14
Network of capillitium only in a few places filled by lime 15
14. Sporangium irregularly split . . . . *Badhamia.*
Sporangium opening with a lid, which afterwards falls away . . . . . *Scyphium.*
15. Network of capillitium irregular . . 16
Tubes of capillitium broad at the base, thinner and thinner higher up, forked numerously at a sharp angle, the branches combined into a regular network, the lime granules not very apparent . . . *Tilmadoche.*
16. Only a few knots of the capillitium charged with granules of lime 17
17. Majority of the knots undeveloped, granules of lime consequently very scarce; sporangium with a single delicate side wall; columella central and cylindrical . . *Crateriachea.*
One half of the knots empty, the other half charged with granules of lime; walls of sporangium double . . . . . *Leocarpus.*
18. Sporangium irregularly split; walls of sporangium single or double . . . . . *Physarum.*
Sporangium splitting regularly with a lid, its margin, after opening, usually cut off . *Craterium.*
19. Wall of sporangium single or double, the outer one always covered on the outside with crystals of lime . . . . . *Didymium.*
Wall of sporangium single or double, the outer one encrusted with granules of lime, sometimes quite shell-like . . . *Chondrioderma.*
Surface of sporangium covered with lime scales, covered by a thin membrane, or lenticular granules of lime placed in fissures of the side wall . . . *Lepidoderma.*
20. Sporangium single, columella central, filled with lime . . . . . *Diachœa.*

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	Æthalium, with columellæ, branched out and filled with air	*Spumaria.*
21.	Sporangium simple	22
	Æthalium	28
22.	Sporangium provided with a columella .	23
	Sporangium without columella (*Echinostcliaceæ*)	27
23.	Columella reaching to one half, or almost to the top of the sporangium, giving origin in numerous places to a net-like capillitium (*Stemonitaceæ*)	24
	Columella reaching to the top of the sporangium, and here forming a discoid flattening, from which alone the capillitium takes its origin (*Enerthenemaceæ*) . . .	26
24.	The last branches of the capillitium form on the surface a network parallel to the walls of the sporangium	*Stemonitis.*
	Without such a surface network . .	25
25.	Columella below the apex loses itself in a capillitium, forming on all sides a complete interwoven network	*Comatricha.*
	Columella reaching only to one half the height of the sporangium; capillitium regularly forked (as in *Tilmadoche*), or forming an entangled net (as in *Arcyria*)	*Lamproderma.*
26.	Fibres of the capillitium forked, but not combined into a network	*Enerthenema.*
27.	Fibres of the capillitium only rarely forked, some of the branches running out into free ends	*Echinostelium.*
28.	Columellæ of the single sporangia grown together in the æthalium into tree like branches grown to the base of the æthalium	29
29.	Single columellæ give rise to the system of a regular capillitium joined into a network, similar to *Comatricha* (*Amaurochetaceæ*) .	30
	From the single columellæ the simple fibres of the capillitium grow in a radial direction, and combine with the similar fibres of neighbouring sporangia at their common point of union (*Brefeldiaceæ*) . .	31
30.	Net of capillitium consisting of stout fibres, triangularly thickened at the knots . .	*Amaurochæta.*
31.	Fibres of capillitium at the outline of the sporangium connected by means of large empty bladders (or cells)	*Brefeldia.*

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32.	Without capillitium (*Atrichæ*) . . .	33
	With capillitium (*Trichophoræ*) . . .	39
33.	Side walls of the sporangium not present or uniform (*Anemeæ*)	34
	Wall of sporangium possessing on the inner side a secondary system of variable net-like thickenings (*Heterodermeæ*) . .	38
34.	Sporangium stipitate (*Dictyosteliaceæ*) .	35
	Sporangium or Æthalium with entire side walls (*Liceaceæ*)	36
	Æthalium with regularly perforated walls (*Clathroptychiaceæ*)	37
35.	Sporangium naked, stem consisting of many cells	*Dictyostelium.*
36.	Plasmodiocarpia	*Licea.*
	Sporangia cylindrical, heaped together, standing on the strongly developed, sometimes stipitate looking hypothallus . . .	*Tubulina.*
	Æthalium naked	*Lindbladia.*
37.	Æthalium formed of one layer of single sporangia, the single sporangia being so constructed that from the upper bell-shaped part six three-cornered fibres run towards the base	*Clathroptychium.*
	Æthalium formed of many layers of sporangia, their outermost walls grown together into a smooth, single, paper-like bark, the inner ones connected with each other in six places, having at the contact of any two of them large openings; the remainder of the walls form a three-winged skeleton of the all-sided network .	*Enteridium.*
38.	System of secondary permanent thickenings netlike, of thin fibres, usually expanded at the knots	*Cribraria.*
	System of permanent thickenings netlike, formed of parallel wide ribs combined by very thin transverse fibrils	*Dictydium.*
	System of permanent thickenings netlike in the lower part of the sporangia, as in *Dictydium*; in the upper part constructed, as in *Cribraria*	*Heterodictyon.*
39.	Æthalium simple, the sporangia having columellæ (*Reticulariæ*)	40
	Sporangia or æthalium without columellæ (*Calonemeæ*)	42
40.	Columella of sporangia developed into tree-like branchings, grown to the bottom of the Æthalium (*Reticulariaceæ*) . .	41

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41. Capillitium of delicate tubes filled with air, their walls not thickened . . . . *Reticularia.*
42. Capillitium without thickenings, often sparsely developed; frequent deposits of lime in the walls; sporangia always simple (*Perichænaceæ*) 43
Thickenings of capillitium in the shape of warts, spines, rings, half rings, or reticulations, the sporangia covered with a thick bark; Æthalium without deposits of lime (*Arcyriaceæ*) 44
Thickenings of capillitium in the form of spirals turned to the right; sporangia single, without deposits of lime (*Trichiaceæ*) . 48
43. Wall double, net of capillitium grown to its inner upper part . . . . . *Perichæna.*
44. Sporangia single 45
Æthalium, with its sporangia combined into a plait; the outer sporangia of this plait form a thick double bark, covered on the outside with small coloured cells . . *Lycogala.*
45. Capillitium of single tubes . . . . *Oligonema.*
Capillitium combined into a net . . . 46
46. Surface of sporangia covered with small coloured cells
Surface of sporangia, without coloured cells 47
47. Net of capillitium grown uniformly to the whole area of the walls of the sporangia *Lachnobolus.*
Only the ends of the net of the capillitium grown to the cyathiform widenings of the stem, or sunk in the midst of its contents *Arcyria.*
Net of capillitium quite free . . . *Cornuvia.*
48. Capillitium formed of numerous simple free threads . . . . . *Trichia.*
Capillitium combined into a net . . . *Hemiarcyria.*

SUPPLEMENTARY ANALYTICAL KEY FOR THE DETERMINATION OF GENERA WITH ÆTHALIA.

1. Spores simple, globose 2
Spores with a segment cut off, collected in groups of from four to twenty-two in number . . . . . *Enteridium.*

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2.	Single sporangia of æthalium without capillitium	3
	Single sporangia of æthalium with capillitium	4
3.	Walls of sporangia grown together entirely	*Lindbladia.*
	With the evanescent walls reduced to six triangular threads	*Clathroptychium.*
4.	Sporangia, without columella . . .	5
	Sporangia, with columella	6
5.	Sporangia combined into a close plait, deprived of walls, except on the outside, covered with a cortex, formed of two layers of coloured vesicles; capillitium without lime, or outer thickenings; spores not violet	*Lycogala.*
	Sporangia combined into a close plait; walls containing lime, now and then the outermost formed into a cortex; capillitium with granules of lime, deprived of all external thickenings; spores violet .	*Fuligo.*
6.	Columella grown together, with tree-like branches, grown to the bottom of the æthalium	7
7.	Spores violet	8
	Spores brown; capillitium of thin-sided tubes, without thickenings, filled with air	*Reticularia.*
8.	Æthalium of a tree-like form, wholly covered with vesicles filled with lime.	
	Walls of sporangia grown together, covered with crystals of lime	*Spumaria.*
	Æthalium of irregular form, without lime .	9
9.	Covered with a thick cortex, capillitium in the form of an all-sided net of stout fibres	*Amaurochæte.*
	Naked, with the surface warted; capillitium of thin threads, at the boundary of the single sporangia joined to large octocellular vesicles filled with air . .	*Brefeldia.*

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MYXOMYCETES OF GREAT BRITAIN.

MYCETOZOA. *De Bary, & Rostafinski.*

DIVISION I. EXOSPOREÆ.

Spores externally developed.

The genus *Ceratium* is referred to this Division by Rostafinski in his inaugural dissertation, but only a slight notice is taken of it in his more recent Monograph, and the genera and species are not characterised. Hence it may be presumed that he holds the Division in small esteem.

DIVISION II. ENDOSPOREÆ.

Spores developed within certain privileged sporocarps.

SUB-DIVISION I. **AMAUROSPOREÆ.**

Spores violet or brownish-violet.

Section A. *ATRICHÆ.*

Sporangia without a capillitium.

ORDER I. PROTODERMEÆ.

Sporangia simple, of regular shape, not possessed of a capillitium, with violet spores.—*Rtfki. Mon.*, p. 90.

Family 1. PROTODERMACEÆ.

Characters the same as those of the Order.

Genus **1.** **PROTODERMA.** *R.*

Wall of sporangium single.

[The single species not yet recorded in Britain.]

Section B. *TRICHOPHORÆ.*

Sporangia constantly possessed of a capillitium.

ORDER II. CALCAREÆ.

On or within the wall of the sporangia, and often in the capillitium deposits of lime, under the form of granules or crystals of carbonate of lime; spores violet, or violet-brown; sporangia often provided with a columella; sporangia simple or compound (Æthalium).—*Rtfki. Mon.*, 91.

Family 2. CIENKOWSKIACEÆ.

Containing lime only in granules; capillitium of threads combined into a net, some of the arms free, others attached to the wall of the sporangium, with large flat granules of lime, often branched; columella absent.—*Rtfki. Mon.*, 91.

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Genus **2.** **CIENKOWSKIA.** *R.*

Sporangium with single wall, splitting irregularly. Free ends of the capillitium bent, sharp pointed.—*Rtfki. Mon.*, 91.

The single species has not yet been recorded in Britain. (Fig. 107.)

Family 3. PHYSARACEÆ.

Deposits of lime only in granules; wall of sporangia single; capillitium of thin-walled broad tubes, combined into a net, filled more rarely with air, usually with lime; columella commonly not developed, or in its place strongly developed central granules of lime, very seldom formed by prolongation of the stem within the sporangium; sporangia simple, more rarely compound (Æthalium). —*Rtfki. Mon.*, p. 92.)

Genus **3.** **PHYSARUM.** *Pers.*

Capillitium combined into an all-sided net, produced uniformly in the midst, and grown to the walls of the sporangium; the tubes swollen at the knots (angles) filled with granules of lime; columella only exceptionally developed; sporangia sometimes splitting with a longitudinal fissure; walls of sporangium single or double. —*Rtfki. Mon.*, 93.

1. **Physarum didermoides.** (*Ach.*)

Sporangia persistently ovate, without columella, with double walls; inner thick, coloured, containing deposits of lime, outer delicate, without colour; prolonged at the base into a thin, thread-like, white, sometimes branching stem, seated on a common, strongly-developed hypothallus; capillitium containing roundish white granules of lime; spores dull violet, with a thick membrane, very spinulose, ·0125-·0142 mm. diam.—*Rtfki., Mon.*, p. 97.

On dead leaves, grass, &c. (Figs. 74, 87.)

Spumaria didermoides, Ach., in Pers. Syn., p. xxix. (1801).
Diderma oblongum, Schum. Saell., No. 1,423 (1803). Flor. Dan., t. 1973, f. 1, Fr. S. M. iii., 103.
Claustria didermoides, Fr. S. V. S., p. 451 (1849).
Didymium congestum, B. & Br. Ann. N. H. (1850), p. 365. Cooke Hdbk., No. 1130.

2. **Physarum Schumacheri.** (*Spr.*)

Sporangia exactly globose, irregularly warted or squamulose, stipitate; stem subulate, erect, smooth or striate, entering the sporangium in the form of a small conical columella; capillitium containing coloured deposits of lime in small angular masses; spores bright violet, with a smooth but stout membrane, ·07-·08,

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sometimes ·01-·014 mm. diam ; colouring variable, yellow, golden-yellow, orange, or ferruginous; now and then veinlike short plasmodiocarp.—*Rtfki. Mon.*, 99.

On leaves of *Sphagnum*, &c.

var. α **genuinum.** Stem yellow, sporangium yellow or greenish-yellow, ½ mm. wide ; spores ·007-·008 mm. ; granules of lime pale-yellow.

β **chrysopus.** Stem and sporangium alike coloured gold-yellow, 1 mm. diam.; spores, .01 mm. ; granules of lime gold-yellow.

γ **aurantiacum.** Spores orange, stem brown; sporangium ½ mm. diam. ; spores ·011 mm. diam. ; granules of lime brown.

δ **rufipes.** Sporangium yellow or orange, now and then beautifully lustrous, stem orange-red ; granules of lime yellowish.

ε **compactum.** Plasmodiocarp veinlike, creeping, short, yellow or golden-yellow, without columella, vanishing with the stem.

Physarum citrinum, Schum. Saell., 1,436 (1803).
Physarum aurantiacum β rufipes, A. & S. Cons., 262 (1805).
Physarum verrucosum, Link. Herb.
Physarum compactum, Ehr. Syl. Ber., p. 21 (1818).
Physarum Schumacheri, Spr. Sys. iv., 528 (1827).
Diderma citrinum, Fr. S. M. iii., 100 (1829). Cooke Hdbk., No. 1107.
Diderma rufipes, Fr. S. M. iii., 101.
Diderma compactum, Wallr. Herb.
Physarum chrysocephalum, Wallr. Herb.
Physarum aureum β chrysopus, Lev. Ann. Sc. Nat. (1846), p. 166.
Physarum flavum, Fckl. Sym., p. 343 (1869).

3. Physarum leucopus. (*Link.*)

Sporangia globose, oval, or a little flattened, stipitate, together with the stem snow-white, scarcely ½ mm. high, now and then standing upon a common hypothallus ; stem of variable length, sometimes almost obsolete, straight, rigid, brittle, attenuated upwards, very much plicate lengthwise, without columella ; capillitium strongly developed, containing numerous angular irregular granules of lime of variable size ; spores spinulose, ·095-·0116 mm.—*Rtfki. Mon.*, p. 101.

On dead wood, &c.

Didymium leucopus, Link. Diss. 2, p. 42 (1809).
Physarum bullatum, Link, Diss. 2, p. 42 (1809). Ditmar. t. 22.
Physarum albopunctatum, Link. Herb.
Didymium leucopus, Fr. S. M. iii., 121 (1829). Eng. Fl. v. 313. Cooke Hdbk., No. 1127.
Physarum ramentaceum, Fr. in litt. ad Wein. (1836).

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4. Physarum cinereum. (*Batsch.*)

Sporangia irregularly globose, or hemispherical; sometimes completely flattened, sessile, gregarious, or crowded together; invariably without stem or columella; usually variable in size; capillitium strongly developed, containing numerous angular irregular granules of lime, differing in size; spores bright violet, with a smooth membrane, or scarcely warted, variable in size, ·0075-·013 mm. diam.—*Rtfki. Mon.* 102.

On bark, wood, leaves, &c. (figs. 85, 71, 72).

Mucilago crustacea, Mich. Gen. t. 96, f. 9 (1729).
Lycoperdon cinereum, Batsch. fig. 169 (1783).
Lycoperdon ulni, Bjer. in Vet. Handl., p. 39 (1789).
Trichia cærulea, Trent, p. 229 (1797).
Physarum cinereum, Pers. Syn., p. 170 (1801). Nees. f. 107. Letell. t. 710, f. 2.
Physarum violaceum, Schum. Saell., 1428 (1803). Fl. Dan., t. 1980, f. 2.
Physarum corrugatum, Link. Herb.
Physarum cælatum, Ehr. Herb.
Physarum conglobatum, Fr. Gast., p. 21 (1818). Letell, t. 710, f 3.
Didymium cinereum, Fr. S. M. iii., 126 (1829). Eng. Fl. v., 314. Cooke Hdbk., No. 1133.
Physarum plumbeum, Fr. S. M. iii., 142 (1829).
Physarum Weinmanni, Fr. var. in litt.
Didymium melanopus, Wallr., No. 2,193 (1833).
Physarum sinuosum, Wallr.
Didymium scrobiculatum, Berk. Hook. Journ. (1845), p. 66.
Physarum album, Fckl. F. Rhen., 1469 (1865).

5. Physarum virescens. (*Ditm.*)

Sporangia sessile, scarcely one-third mm. broad, very much crowded, yellow or greenish, irregularly globose, without stem or columella; capillitium evanescent, containing very small granules of lime in irregular angular masses; spores bright violet, with a smooth membrane, ·0075-·009 mm.—*Rtfki. Mon.*, 103.

On leaves, &c.

Physarum virescens, Ditm., t. 61 (1817).
Physarum thejoteum, Fr. Gast., p. 21 (1818).
Physarum anceps, Fckl. Sym. Myc., p. 343 (1869).

6. Physarum contextum. (*Pers.*)

Sporangia very much crowded, almost kidney-shaped, sessile, on a broad base, or elongated and contorted, twisted together, and

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interwoven one with another, plane; walls double, the outer thick, containing lime, orange or snow-white, the inner thin and yellowish; capillitium containing numerous granules of lime in irregular masses, uncoloured, usually without a columella; spores dull brown-violet, very spinulose, ·011-·0133 mm.—*Rtfki. Mon.*, 109.

On dead grass, ferns, &c.

var. *α* **genuinum.**

Sporangia kidney-shaped, sitting on a wide base, gregarious or complicated, from 1 to 1·5 long, 0·25 mm. wide.

var. *β* **splendens.**

Sporangia elongated, twisted one with another, as it were interwoven, with the upper part sunk in, now and then much settled at the margin, from 1 to 2·5 mm. long, 0·25 mm. wide.

Diderma contextum, Pers. Obs. i., 89 (1796). Ditm. t. 39. Cooke Hdbk., No. 1117.
Physarum contextum, Pers. Syn., 168 (1801).
Didymium contextum, Fr. Gast., p. 20 (1818).
Leocarpus contextus, Fr. S. V. S., 450 (1849).
Chondrioderma contextum, Rtfki. in Fckl. Sym. Myc. ii., 74 (1873).

7. Physarum sinuosum. (*Bull.*)

Plasmodiocarp marginately flattened, narrow edge grown to the substratum, elongated, twisted together, or combined in a reticulate manner, snow-white or slightly yellowish, usually splitting at the apex with a longitudinal fissure; walls double, the outer thick, containing much lime, brittle, the inner thin-sided, greyish; capillitium strongly developed, containing numerous snow-white granules of lime, always for the greatest part branched below, the rest in irregular angular lumps; spores brownish-violet, with a thick tough membrane, smooth, ·0083-·009 mm. diam.—*Rtfki. Mon.*, 112.

On various substances (fig. 91).

Reticularia sinuosa, Bull. t. 446, f. 3 (1791). Sow., t. 6.
Physarum bivalve, Pers. Obs. t. i., f. 2 (1796).
Trichia sphærica, *β polymorpha*, Trent., p. 230 (1797).
Angioridium sinuosum, Grev. S. C. Fl., t. 310 (1828). Eng. Fl. v., 315. Cooke Hdbk., No. 1142, fig. 128.
Diderma valvatum. Fr. S. M. iii., 109 (1829).
Didymium sinuosum, DR. & M. Fl Alg., p. 411 (1846).
Carcerina valvata, Fr. S. V. S., p. 451 (1849).
Leocarpus melaleucus, Gay, in Mont. Syll., 1,072 (1855).
Diderma contortum, Fckl. Sym. Myc., 341 (1869).
Diderma pallidum, B. & C., in Grevillea iii., 52 (1873).

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8. **Physarum leucophæum.** *Fr.*

Sporangium irregularly globose, usually stipitate, with a stem of variable length, now and then short and obsolete, then apparently sessile, sometimes confluent and formed into an entangled plasmodiocarp; capillitium characteristic, thin-sided between the knots, either long or very short, only rarely containing granules of lime, all very irregular; spores bright violet, smooth, ·0087-·0096 mm. diam.—*Rtfki. Mon.*, 113.

On trunks, amongst moss, &c.

α **genuinum.** Sporangium greyish-white; stem stiff, erect, bright brown, now and then sessile.
(1) **stipitatum.** Sporangium stipitate.
b. **connexum.** Stems grown together through their whole length; sporangia now and then confluent.
(2) **sessile.** Stem short, disappearing, or entirely undeveloped, standing singly.
b. **conglobatum.** Sporangia standing in little heaps, now and then confluent.

β **violascens.** Sporangia violet, iridescent; stem often straw-coloured, now and then but little stiff, almost recumbent on the substratum. Here belongs the form with but little lime.
(1) **stipitatum.**
(2) **sessile.**

γ **flexuosum.** Plasmodiocarp vein-like, creeping, now and then combined in a reticulate manner.

On leaves, &c.

Sphærocarpus albus, Bull., p. 136, var. 3, 4 (1791).
Trichia filamentosa, Trent., p. 227 (1797).
Physarum confluens, Link. Diss. ii., 42 (1809).
Physarum connexum, Link. Diss. ii., 42 (1809).
Physarum hypnorum, Link. Diss. ii., 42 (1809).
Physarum albopunctatum, Link. Herb.
Physarum clavus, Ehr. Herb.
Physarum conglobatum, Ditm., t. 40 (1817).
Physarum leucophæum, Fr. Sym. Gast., p. 24. Sys. Myc. iii., 132 (1818). Cooke Fungi Brit ii., No. 519.
Didymium melanopus, β *clavus*, Wallr. non Fries (1833).
Didymium terrestre, Fr. in Weinm (1836).
Physarum albipes, De Bary, not Link. (1859).
Physarum striatum, Fckl. Sym. Myc., 342 (1869).
Didymium hemisphericum, Fckl. Sym. Myc., 341 (1869).

Although differing in some particulars from the forms described by Rostafinski, we have nevertheless referred the species issued in "Fungi Britannici" to this place. The specimens contain, mixed

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with a few shortly stipitate individuals, sessile and confluent sporangia, as in var. *sessile*, form *conglobatum*. It is undoubtedly an exceedingly variable species.

The following two species are not included in Rostafinski's Monograph.

9. Physarum metallicum. *Berk.*

Sporangia subglobose, slightly depressed, a line or more in diameter, sessile, quite smooth, very delicate, of a most beautiful metallic appearance, bursting irregularly; capillitium and spores pink-grey; walls single.—*Mag. Zool. & Bot.*, No. 29.

On decorticated stick.

Physarum metallicum. Berk. Mag. Zool. & Bot., No. 29, t. 3, f. 8; Cooke Handbk., No. 1139.

10. Physarum Tussilaginis. *B. & Br.*

Sporangia sessile, roundish or irregular, flattened, broadly adnate, slightly shining, smooth, livid grey; capillitium of delicate, thin, uncoloured threads, with scarcely any evidence of the presence of lime; spores globose, dark-violet, rough.—*Ann. N. Hist.*, No. 1597.

On leaves of *Tussilago*.

Badhamia capsulifer. Cooke Fungi Brit., Ser. i., No. 526; Ser. ii., No. 206.

Physarum Tussilaginis. B. & Br. Ann. Nat. Hist., No. 1597; Grevillea, v. p. 12.

This is not a good species of *Physarum*; there is scarcely any lime, or capillitium.

[*Physarum atrum*, Fr. S. M. iii., 147; Berk., Ann. N. Hist., 216; Cooke Handbk., No. 1141. Rostafinski excludes this from Myxomycetes, under the name of *Apiosporium imersum.*]

PHYSARUM.

ANALYTICAL TABLE OF THE SPECIES.

[This table is given as compiled by Rostafinski, the names of species found in Britain being in small capitals, the residue in *italics*.]

A. Wall of sporangium, single.

† Granules of lime more or less rounded.

* Wall of sporangium, after losing the lime, uncoloured.

Sporangium stipitate or sessile . *candidum.*

** Wall of sporangium, after losing the lime, at least in the lower part, violet coloured.

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·) Sporangia sessile . . . *lividum.*
·) ·) Sporangia stipitate.
Stem black, shining . . *nephroideum.*
Stem snow-white, opaque . *affine.*
†† Granules of lime in small angular masses.
* With columella.
Sporangium and stem white . *globuliferum.*
Sporangium with stem coloured. SCHUMACHERI.
** Without columella.
·) Granules of lime not numerous, and not all the knots swollen.
! Capillitium elastic, after the opening of the sporangium elongating itself many times . . . . *Famintzini.*
!! Capillitium not elastic.
Granules of lime of the usual form . . . . LEUCOPHÆUM.
Granules of lime in the optical section bounded by right angles . . . . *Capense.*
·) ·) Granules of lime very numerous.
! Sporangium invariably sessile.
∴ Plasmodiocarp of irregular form, creeping, vein-like, capillitium flesh-coloured *gyrosum.*
∴ ∴ Sporangium single.
Wall of sporangium, and granules of lime white CINEREUM.
Wall of sporangium, and granules of lime yellow or greenish . . . . . VIRESCENS.
Wall of sporangium, and granules of lime brown. *Braunianum.*
Wall of sporangium, and granules of lime scarlet. *rubiginosum.*
!! Sporangia invariably stipitate, stem straw-colour, drooping, often fasciculate, sporangia united together . . . *polymorphum.*
Stem snow-white, sporangia grey . . . . LEUCOPUS.
Stem and sporangia sulphur-coloured . . . *sulphureum.*
Stem and sporangium yellow *flavum.*
Stem red . . . . *psittacinum.*
Stem purple . . . *pulcherimum.*
Stem brown or straw-colour *Berkeleyi.*
B. Wall of sporangium double.
† Inner denser, stipitate . . . DIDERMOIDES.
†† Outer denser, sessile.

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* Plasmodiocarp creeping or net-like, splitting with a longitudinal fissure	SINUOSUM.
** Sporangium single.	
·) Globose, snow-white . .	*diderma.*
·) ·) Not globose, yellow or orange, rarely white.	
Spores ·008-·009 mm., scarcely spinulose	*conglomeratum.*
Spores ·012 mm., very spinulose . .	CONTEXTUM.

Genus **4.** **CRATERIUM.** *Trent.*

Sporangia regular, determinate, splitting with a lid, walls papyraceous, stiff, invariably stipitate. Lower part of the sporangium, after the spores are expelled, permanent, cyathiform ; walls of sporangia double or treble, the outer passing down into the tubular stem, inner usually surrounding the mass of spores on all sides, and the base of the tubes of the capillitium stout, inevitably containing numerous granules of lime; rigid, persistent after the dispersal of the spores; columella almost always evident, formed in the centre by the free, strongly-developed knots of the capillitium. —*Rtfski. Mon.*, 118.

Sub.-Gen. 1. *Leiocraterium.*

11. **Craterium vulgare.** *Ditm.*

Stem equal in length to the sporangium, coloured, very plicate, penetrating, shining ; sporangium cyathiform, otherwise coloured, rugose below, shining and smooth above ; lid chalky-white; spores bright-violet, smooth, ·083-·01 mm.—*Rtfki. Mon.*, 118.

var. *α.* **genuinum.**
Sporangium dark nut-brown, stem saffron-yellow.
„ *β.* **confusum.**
Sporangium ochre-brown, stem rusty-yellow or dull-brown.
„ *γ.* **albicans.**
Sporangium whitish, dirty-ochre below, stem ochrey, or dull-brown.

On moss, sticks, leaves, &c. (Figs. 94, 96.)

Fungoides infundibuliforme, Mich., t. 86, f. 13 (1729).
Craterium pedunculatum, Trent., p. 244 (1797); Cooke Hdbk., No. 1149.
Craterium vulgare, Ditm., t. 9 (1817); Nees., f. 120; Chev. Par., t. 4, f. 26.
Craterium leucocephalum, Desm. Cat., 27 (1823).
Craterium minutum, Cooke Fungi Brit., i., No. 525; ii., 208.

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12. Craterium pyriforme. *Ditm.*

Stem shorter than the sporangium, very plicate, penetrating the shining, pyriform, ochrey-brown coloured sporangium ; lid chalky-white ; columella distinct; spores bright-violet, smooth, ·083-·01 mm.—*Rtfki. Mon.*, 120.

On bark.

Craterium pyriforme, Ditm., t. 10 (1817) ; Fr. S. M., iii. ; Cooke Handbk. No. 1150.

13. Craterium minutum. (*Leers.*)

Sporangium pyriform, together with the lid of the same colour ; stem concolorous, or dusky-coloured ; lid convex; columella distinct; spores bright-violet, smooth, ·0083-·01 mm.—*Rtfki. Mon.*, 120.

var. *a.* **genuinum.**
Sporangium with the lid leather-colour, stem rusty, short.

„ *β.* **turbinatum.**
Sporangium, lid, and stem alike dirty-yellow coloured ; stem usually short, now and then otherwise, with the stem one-and-a-half times the length of the sporangium.

On moss, leaves, &c. (Fig. 95.)

Peziza minuta, Leers. Fl. Herb., No. 1085 (1775).
Cyathus minutus, Hoff., Veg. Cr., t. 2, f. 2 (1790) ; Sow., t. 239.
Trichia minuta, Relh. Cant. teste Fr. (1786).
Nidularia minuta, With. Arr., iv. (1792).
Sphærocarpus operculata, Schum. Saell., 1503 (1803).
Physarum turbinatum, Schum. Saell., 1450 (1803).
Craterium leucocephalum, Grev. S. C. Fl. t. 65? (1814).
Craterium minutum, Fr. S. M., iii., p. 151 (1829); Eng. Fl., v., 316 ; Cooke Hdbk., 1151.
Craterium turbinatum, Fr. S. M., iii., 152 (1829).
Arcyria leucocephala, Auct.

Sub.-Gen. 2. *Trachycraterium.*

14. Craterium leucocephalum. (*Pers.*)

Sporangium turbinate, erect, ferruginous, variegated with white, the lower part, together with the stem, very plicate, ferruginous ; capillitium, columella, and spores rusty-brown colour; spores smooth, ·0083-·01 mm.—*Rtfki. Mon.*, 123.

On various substances. (Figs. 98, 100.)

Fungoides minimum, Mich., t. 86, f. 14 (1729).
Peziza convivalvis, Batsch., p. 121 (1781).

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Stemonitis leucocephala, Pers., in Gmel. Sys, 1,464 (1791).
Stemonitis cyathiformis, Schrnk., p. 19 (1790).
Trichia cinerea, Trent., p. 227 (1797).
Arcyria leucocephala, Hoff. Veg. Cr., t. 6, f. 1. (1795).
Physarum pedunculatum, Schum. Saell., 1453 (1803).
Trichia aureæ affinis, Fl. Dan., t. 1314 f. 2 (1810).
Cyathus cinereus, Purt. Mid. Fl., t. 35 (1817).
Craterium leucocephalum, Ditm., t. 11 (1817) Grev. S. C. Fl., t. 65.; Eng. Fl. v., p. 316; Cooke Hdbk., No. 1152.
Craterium vulgare, Chev. Fl. Par., 340 (1826).
Physarum leucostictum, Chev. Fl. Par., t. 9, f. 29 (1826).
Craterium leucostictum, Fr. S. M., iii., 152 (1829).
Cupularia leucocephala, Link. Hdbk., iii., 421 (1833).
Physarum xanthopus, Wallr. in sched.
Craterium xanthopus, Wallr. Fl. Germ. ii., 358 (1836).
Craterium deoperculatum, Fr. in Weinm., 597 (1836).
Craterium pendulum, Fr. in Weinm., 597 (1836).
Cupularia xanthopus, Rabh. Fl. Cr., 2226 (1844).
Craterium pruinosum, Corda. Ic., vi., t. 12, f. 33 (1854).

15. Craterium aureum. (*Schum.*)

Sporangium turbinate, roundish, together with the short stiff stem golden-yellow, very rough; capillitium containing granules of lime, with the columella yellowish; spores rusty-brown, ·0083-·01 mm.—*Rtfki. Mon.*, 125.

On bark, moss, &c.

Trichia aurea, Schum. Saell., 1,461 (1803).
Craterium mutabile, Fr. S. M., iii., 154 (1829); Eng. Fl., v., 316; Cooke Hdbk., 1153.
Cupularia mutabilis, Rabh. Fl. Cr., 2225 (1844).
Physarum Durieui, Mont. Herb.

Genus **5. CRATERIACHEA.** *R.*

Sporangia splitting irregularly, the lower portion permanent after the dispersal of the spores, margin lacerated; central columella cylindrical, containing lime; capillitium of delicate tubes in a thick net running towards the wall of the sporangium; knots undeveloped, only exceptionally swollen with granules of lime; meshes of the net of the capillitium towards the margin of the sporangium less and less, terminating in very small, short, perpendicular ends united to the wall.—*Rtfki. Mon.*, p. 125.

[The single species not yet recorded in Britain. Figs. 102, 103.]

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Genus **6.** **TILMADOCHE.** *Fr.*

Sporangia stipitate, splitting in an irregular or reticulate manner, without columella; wall of sporangia single, very delicate, weakly, but not uniformly containing deposits of lime; tubes of the capillitium at the bottom simple, forking through the whole length at a sharp angle, the rest straightened, therefore formed into a regular net; granules of lime very small, fusiform, not numerous.—*Rtfki. Mon.*, 126.

16. **Tilmadoche nutans.** (*Pers.*)

Sporangia lenticular, plane or concave below, usually cracked in many places, umbilicate, greyish-white, stipitate, nodding; stem of variable length, subulate, cernuous, furrowed, whitish-grey or greyish-brown; capillitium strongly developed, tubes uncoloured, containing very small irregular granules of lime; spores bright-violet, smooth, ·009-·0103 mm.—*Rtfki. Mon.*, 127.

On rotten wood, &c. (Fig. 129.)

α. **forma propria.** Stem as long as the sporangium, or usually twice as long, thin, wrinkled.

β. **rigida.** Stem more than three times the length of the sporangium, rigid, nearly cylindrical, furrowed.

Sphærocarpus albus, Bull., t. 407, f. 3, c-g (1791).
Stemonitis alba, Gmel. Sys., 1469 (1791).
Mucor albus, Sobolen. Petr., 324 (1779).
Physarum nutans, Pers. Syn.. p. 171 (1801). Berk. Eng. Fl. v., 314. Cooke Hdbk., No. 1135 partly.
Physarum subtile, Pers. Syn., p. 171 (1801).
Trichia cernua, Schum. Saell., 1410 (1803).
Physarum bulbiforme, Schum. Saell., 1432 (1803). Fl. Dan., t. 1974, f. 3.
Physarum marginatum, Schum. Saell., 1440 (1803).
Physarum didymium, Schum. Saell., 1441 (1803).
Physarum albopunctatum, Schum. Saell., 1433 (1803).
Physarum brevipes, Schum. Herb.
Physarum cinereum, Schum. Herb.
Physarum leucopus, Schum. Herb.
Trichia alba, DC. Fl. Fr. ii., 202 (1805).
Physarum albipes, Link. Diss. i., 27 (1809).
Physarum sulcatum, Link. Diss. i., 27 (1809).
Physarum connectum, Ditm., t. 41 (1817).
Physarum cernuum, Fl. Dan., t. 1974, f. 2 (1823).
Physarum nutans α *albocinereum*, Fr. S. M. iii., 128 (1829).
Didymium marginatum, Fr. S. M. iii., 116 (1829).
Tilmadoche cernua, Fr. S. V. S., 454 (1849).

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17. Tilmadoche mutabilis. *Rtfki.*

Sporangia globose, flattened, or lenticular, plane below or concave, usually cracked in many places, umbilicate, yellow, greenish-yellow, or rusty orange, stipitate, nodding, splitting irregularly, or in a reticulate manner; stem variable in length, subulate, cernuous, straw-colour, yellow, scarlet, or ferruginous; capillitium coloured the same as the sporangia, strongly developed; tubes strongly developed, containing fusiform colourless granules of lime; spores. —*Rtfki. Mon.*, 130.

On decayed wood (figs. 123-127, 132).

α. **lutea.** (Bull.)
Sporangium variously yellow, now and then greenish-yellow; stem similarly coloured, or now and then ferruginous, usually irregularly, more rarely reticulately splitting.

β. **aurantiaca.** (Bull.)
Sporangium coloured orange or rusty-orange; stem more rarely similarly coloured, usually dark brown, splitting in a reticulate, or now and then irregular manner.

Stemonitis viridis, Gmel. Sys., ii., 1469 (1791).
Stemonitis aurantia, Gmel. Sys., ii., 1469 (1791).
Stemonitis bicolor, Gmel. Sys., ii., 1469 (1791).
Sphærocarpus luteus, Bull., t. 407, f. 2 (1797).
Sphærocarpus viridis, Bull., t. 407, f. 1 (1797).
Sphærocarpus aurantius, Bull., t. 484, f. 2 (1797).
Physarum aureum, Pers. Disp., t. i., f. 6 (1801); Grev., t. 124; Ditm., t. 23.
Physarum viride, Pers. Syn., p. 172 (1801); Ditm., t. 24; Nees., f. 108.
Physarum aurantium, Pers. Syn., t. iii., f. 7 (1801).
Physarum luteum, Pers. Syn., 172 (1801).
Trichia viridis, DC. Fl. Fr., ii., 252 (1805).
Trichia aurantia, DC. Fl. Fr., ii., 253 (1805).
Physarum nutans, β. *viride*, Fr. S. M., iii., 129 (1829); Cooke Hdbk. No. 1135 var. B.
Physarum nutans, γ *aureum*, Fr. S. M., iii., 129; Cooke Hdbk., No. 1135, var. γ.
Physarum nutans, δ. *coccineum*, Fr. S. M., iii., 129.
Physarum striatum, *c. aurantiacum*, Fr. S. M., iii., 131.
Physaram nutans, *c. luteovirens*, Rabh. Fl. Cr., 2,268 (1844).
Physarum viride, Fr. S. V. S., 453 (1849).
Physarum aureum, Fr. S. V. S., 453 (1849).
Physarum coccineum, Fr. S. V. S., 453 (1849).

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Genus **7.** **LEOCARPUS.** (*Link.*)

Sporangia irregularly splitting, with double walls; inner wall surrounding the mass of spores on all sides, and giving origin to the capillitium; outer wall thick, passing down to the stem or hypothallus. Tubes of the capillitium formed into a thick net, the greater part of the knots weakly developed, filled with air, the rest very much swollen, and changed into granules of lime.—*Rtfki. Mon.*, 132.

18. **Leocarpus fragilis.** (*Dicks.*)

Sporangia obovate, or somewhat roundish, sessile, or with a thin thread-like, coloured, rising stem; bright, shining, containing coloured granules of lime; spores dull violet, spinulose, ·012-·0148 mm.—*Rtfki. Mon.*, 132.

On grass, twigs, moss, &c. (fig. 93).

Lycoperdon fragile, Dicks. Cry., t. 111, f. 3 (1785); Sow., t. 136.
Reticularia fragilis, Poir. Ency.
Lycoperdon parasiticum, With. Arr., iv., 379 (1792).
Diderma vernicosum, Pers. Obs., t. 111, f. 7 (1796); Fl. Dan. t. 1312, f. 2; Eng. Fl., v., 311; Cooke, Hdbk., No. 1108.
Trichia lutea, Trent., p. 230 (1797).
Diderma vernicosum, β. *parasitica*, Pers. Syn., 165 (1801).
Physarum nitidum, Schum. Saell., 1451 (1803).
Physarum vernicosum, Schum. Saell., 1452 (1803).
Leocarpus vernicosus, Link. Obs., i., 25 (1809); Nees., f. 100; Grev. S. C. Fl., 111; Corda., v., f. 32.
Leocarpus spermoides, Link. Obs., i., 25 (1809).
Leocarpus atrovirens, Fr. Gast., p. 13 (1817).
Leangium vernicosum, Fr. Strip. Femj., 83 (1825).
Leangium atrovirens, Fr. Stirp., 83 (1825).
Diderma atrovirens, Fr. S. M, iii., 103 (1829).
Tripotrichia elegans, Corda. Ic., i., f. 288A (1837).

Genus **8.** **FULIGO.** *Hall.*

Variable in size, deformed, diversely coloured, æthalium compounded of variously entangled vein-like sporangia, with but little cohesion; central stratum filled with spores and capillitium, outer empty, not always developed into a cortex, containing plentiful deposits of lime; inferior stratum joined to the pelliculose hypothallus; capillitium strongly developed, containing angularly irregular, but not numerous, granules of lime.—*Rtfki. Mon.*, 134.

19. **Fuligo varians.** (*Sommf.*)

Sporangia more or less closely interwoven, bark not always developed; walls of sporangia usually coloured; capillitium strongly developed, containing (not numerous) granules of lime in irregular angular masses; spores dull-violet, smooth, ·0075-·01 mm.—*Rtfki. Mon.*, 134.

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var. *a.* **ecorticata,** superficie gyrosa.
β. **strata floccosa,** corticatum.
γ. **strato stipato,** lævissimo corticatum.

On various substances (figs. 97, 101, 104, and 106).

Eponge, March, 427, t. 12 (1727).
Mucilago æstiva, Mich., t. 96, f. 1 (1729).
Mucores, Gled, p. 138, p. 160 (1753).
Mucor unctuosus flavus, Huds. Fl. Ang.
Mucor septicus, Link. Sp. Pl., No. 1656 (1753); Fl. Dan., t. 778; Bolt., t. 134.
Mucor primus ovatus, Schff., t. 192 (1763).
Mucor tertius, Schff., t. 194 (1763).
Fuligo, Hall, No. 2133, 2134, 2135 (1768).
Mucor mucilago, Scop. Fl. Carn., ii., 1638 (1772).
Lycoperdon luteum, Schr. Fl. Bav, ii., 629 (1789).
Reticularia carnosa, Bull., t. 424, f. 1 (1791).
Reticularia hortensis, Bull, t. 424, f. 2 (1791).
Reticularia lutea, Bull., t. 380, f. 1 (1791).
Fuligo septica, Gmel. Sys., 1466 (1791).
Fuligo candida, Pers. Obs., i., 154 (1796).
Fuligo vaporaria, Pers. Obs., i., 155; Fl. Dan. t., 1,363, f. i.
Fuligo flava, Pers. Disp., p. 8 (1797).
Fuligo rufa, Pers. Disp., p. 8 (1797).
Fuligo pallida, Pers. Obs., ii., 36 (1799).
Fuligo lævis, Pers. Syn., p. 161 (1801).
Fuligo violacea, Pers. Syn., 160 (1801); Ic. Pict., t. i.
Reticularia septica, With. Arr., iv., 463 (1801); Purt., p. 703.
Reticularia ovata, var. With. Arr., iv., 463 (1801).
Fuligo flavescens, Schum. Saell., 1413 (1803).
Fuligo cerea, Sow., t. 399 (1803).
Æthalium flavum, Link. Diss., i., 42 (1809); Nees., f. 92; Grev. S. C. Fl., t. 272.
Fuligo cerebrina, Brondeau, p. 74, t. 3, f. 1-4 (1824).
Fuligo varians, Somm. Fl. Lapp., p. 231 (1826).
Reticularia vaporaria, Chev. Fl. Par., i., 342 (1827).
Æthalium violaceum, Spr. Sys., iv., 533 (1827).
Æthalium candidum, Schlecht. in Spr. Syst., iv., 533.
Æthalium septicum, Fr. S. M., iii., 93 (1829), Cooke Hdbk., No. 1101, *a. flavum, b. cinnamomeum, c. rufum, d. violaceum.*
Fuligo carnosa, Duby. Bot. Gall., ii., 863 (1830).
Fuligo hortensis, Duby. Bot. Gall., ii., 863 (1830).
Æthalium rufum, Wallr. Fl. Germ., 2097 (1833).
Æthalium septicum, b. vaporarium, Rabb. Fl. Germ. 2133 (1844).
Æthalium ferrincola, Schwz. Am., 2372 (1834).
Reticularia rufa, Schwz. Am., 2377 (1834).
Æthalium rufum, Alexandr., t. 11, f 6-11 (1872).
Æthalium vaporarium, Fr. Berk. in Gard. Chron. (1860), p. 409; Cooke Hdbk., No. 1102.

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Genus **9.** **TRICHAMPHORA.** (*Jungh.*)

Sporangia splitting irregularly, with single wall, slightly containing lime; capillitium of tubes equally wide from the bottom throughout their whole length, combined into a loose net, empty, or filled with air; without columella, often stipitate.—*Rtfki. Mon.*, 138.

[No British representative.]

Genus **10.** **BADHAMIA.** *Berk.*

Sporangia with single wall, splitting irregularly; capillitium uniformly grown to the wall of the sporangium, with numerous branches combined into an all-sided net, now and then with a distinct central columella, entirely filled throughout their length with small granules of lime.—*Rtfki. Mon.*, 139.

20. **Badhamia hyalina.** (*Pers.*)

Sporangia in clusters, always exactly globose, inflated, smooth, greyish-white, after the spores are expelled snow-white, either almost stemless or else with a stem of variable length, which is simple or fasciculate, branching, straw or rusty-yellow; spores, from 5 to 20, slightly agglutinated together in a heap; single spores ·01-·0125 mm., dull violet, with a thick membrane, spinulose; without columella, knots of capillitium very faintly developed.—*Rtfki, Mon.*, 140.

a. **subsessilis.** Stem short, disappearing, sporangium seeming to be sessile.
β. **genuina.** Stem 3-4 mm. long, usually rigid.
γ. **gracilis.** Stem elongated, more than 5 mm. long, usually fasciculate, nodding, slender.

On rotten wood. (Fig. 113.)

Physarum hyalinum, Pers. Disp., t. 2, f. 4 (1797); Eng. Flor., v., p. 315; Ann. Nat. Hist., No. 213.
Physarum membranaceum, Schum. Herb.
Physarum globuliferum, DC. in herb.
Physarum hyalinum a. albidum, A. & S., 256 (1805).
Physarum cinereum, Link. Diss., i., 27 (1809).
Physarum botryoides a. hyalinum, Fr. Stirp. p. 83 (1825).
Physarum botrytis, Somm. (1826).
Physarum gracile, Weinm. Herb.
Physarum cancellatum, Wallr. Fl. Germ., 2128 (1833).
Diderma papaverinum, Wallr. Fl. Germ., 2210 (1833).
Badhamia hyalina, Berk. Linn. Trans., xxi., t. 19, f. 3 (1851), Cooke Handbook, No. 1143.
Physarum gracilentum, Fckl. Sym., 342 (1869), non Fries.

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21. Badhamia capsulifera. (*Bull.*)

Numerous sporangia seated side by side on a common hypothallus, some elevated on a very small stem; sporangia irregularly obovate, greyish-white; now and then hemispherical, deformed, sessile, greyish or shining-yellow; capillitium with the knots faintly developed; spores dull violet, ·01-·0125, with a thick spinulose membrane, from 5 to 20, slightly agglutinated together. —*Rtfki. Mon.*, 141.

On decayed branches.

Sphærocarpus capsulifer, Bull, t. 470, f. 2 (1791).
Trichia capillifera, DC. Fl. Fr., 684 (1805).
Physarum capsuliferum, Chev. Fl. Fr., i, 339 (1826).
Badhamia capsuliferum, Berk. Linn. Trans., xxi., p. 153 (1851); B. & Br. Ann. Nat. Hist., No. 1595; Grevillea, Vol. v., p. 12 (not Cooke).
Badhamia nitens, Berk. Linn. Trans., xxi., p. 153, t. 19, f. 1 (1851); Ann. Nat. Hist., No. 731; Cooke Handbook, No. 1146.

22. Badhamia utricularis. (*Bull.*)

Sporangia more or less obovate, always coloured, opaque, or with a metallic lustre; capillitium of large tubes combined into a loose net, knots strongly developed, very much flattened; spores simple, dull-violet, spinulose, ·01-·0125 mm.—*Rtfki. Mon.*, 142.

On rotten wood. (Figs. 110-112.)

a. **sessilis.** Sporangium entirely without stem, wide base grown to the substratum, always standing side by side in little tufts, now and then even united, irregularly globose, much flattened, the surface slightly corrugated, livid-violet.

β. **splendens.** Sporangium very small, from $\frac{1}{2}$ to $\frac{2}{3}$ mm. wide, exactly globose or oblong, with a very short straw-coloured stem standing in company on a substratum, not clustered, either lilac or opaque sky-blue, or bronze or blackish-green, with metallic lustre.

γ. **genuina.** Sporangium from $\frac{3}{4}$ to 1 mm. wide, persistently ovate, stem even, shorter, or the length of the sporangium, slightly corrugated, livid-violet.

δ. **Schimperiana.** Sporangium persistently ovate, often elongated, quite smooth, bright-violet, with a metallic lustre, stems suspended, hanging down, straw-yellow, fasciculate through their length, 4 mm. long.

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Sphærocarpus utricularis, Bull, t. 417, f. 1 (1791).
Physarum ovoideum, Schum. Saell, 1425 (1803).
Trichia utricularis, DC. Fl. Fr., 676 (1805).
Physarum hyalinum β. chalybeum, A. & S., No. 256 (1805).
Physarum botryoides β. chalybeus, Fr. Stirp., p. 83 (1825).
Physarum utriculare, Chev. Fl. Par., i., 337 (1826); Berk. Ann. Nat. Hist., 214.
Physarum cærulescens, Pers. in litt.
Physarum alutaceum, Wallr. Herb.
Badhamia utricularis, Berk. Linn. Trans., xxi., p. 153 (1801); Cooke Handbook, No. 1147.
Physarum melaleucum, Nyl., p. 126 (1859).

23. Badhamia lilacina. (*Fr.*)

Sporangia more or less exactly globose, sessile, smooth, opaque, bright lilac-flesh colour; capillitium combined into a loose net, tubes of very variable diameter, in the centre very small but distinct, formed into an irregular columella; spores violet, covered with numerous obtuse warts, scattered irregularly over the surface, ·0125-·0155 mm. diam.—*Rtfki. Mon.*, 145.

On decayed wood and bark. (Figs. 108, 109.)

Physarum lilacinum, Fries Sys. Myc., iii., p. 141 (1829); B. & Br. Ann. Nat. Hist., No. 215; Cooke Handbook, No. 1138.
Badhamia lilacina, Rostfki. Mon. Myc., p. 145 (1875).

24. Badhamia fulvella. *B.*

Sporangia gregarious, but not forming distinct patches, sessile, globose, blackish, invested with a delicate tawny pubescence, when the spores are expelled yellowish; capillitium not coloured, tubes swollen; spores dark-violet, agglutinated in clusters, ·0125-·018 mm.—*Linn. Trans.*, xxi., p. 154.

On dead wood.

Badhamia fulvella, Berk. in Linn. Trans., xxi. (1851), p. 154; Ann. Nat. Hist., No. 733; Cooke Handbook, No. 1144.

Not included by Rostafinski in his Monograph, except amongst species which he had not seen. The same remark applies also to the two following species.

25. Badhamia pallida. *B.*

Sporangia sessile, depressed, somewhat lenticular, crowded here and there in irregular groups, sometimes confluent, somewhat wrinkled, pallid-yellow, capillitium of yellow-branched tubes,

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attached to the inner wall, triangular at the angles, with a large central vesicle; spores large, with a granulated surface, ·0127-·02 mm., at first collected in clusters.—*Berk. Linn. Trans.*, xxi., p. 153.

On decayed oak branches.

Badhamia pallida, Berk. Linn. Trans., xxi., p. 153 (1851), t. 19, fig. 2; Ann. Nat. Hist., No. 732; Cooke Handbook, No. 1145.

26. Badhamia inaurata. *Curr.*

Sporangia gregarious, sessile, globose, or nearly so, bright-yellow, 1·25 mm. across, covered with floccose yellow scales, splitting by irregular fissures; capillitium ?; spores minutely rough, at first agglutinated in clusters, ·01-·015 mm.—*Linn. Trans.*, xxiv., p. 151.

On *Jungermannia*.

Badhamia inaurata, Currey in Linn. Trans., xxiv. (1851), t. 25, f. 8; Berk. & Br. Ann. Nat. Hist., No. 1034; Cooke Handbook, No. 1148.

[*Badhamia fulvescens*, Cooke in Grevillea, Vol. iv., p. 69, does not belong to this genus.]

BADHAMIA.

A.	Spores smooth.	
	† Upper walls of the gregarious sporangia grown together into one head	*coadnata.*
	†† Sporangia always preserving the simple form.	
	* Capillitium strongly developed, rigid, sporangia usually provided with a columella. Spores ·009-·0116 mm. diam.	*panicea.*
	** Capillitium evanescent; sporangia without columella. Spores ·0125 mm. diam.	*verna.*
B.	Spores spinulose.	
	† Spines irregularly dispersed over the membrane of the spores.	
	* Sporangia lilac-flesh coloured.	LILACINA.
	†† Spines equally distributed.	
	* Vein-like plasmodiocarp.	*Alexandrowiczii.*
	** Sporangia simple.	
	·) Spores crowded in little heaps; sporangia exactly globose, inflated	HYALINA.
	Sporangia of irregular form	CAPSULIFERA.

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·) •) Spores single, free.
! Sporangium beautifully iridescent, violet.
Spores ·0125 mm. . . UTRICULARIS.
!! Sporangia grey or white;
Spores ·0116-·0148 mm. . *macrocarpa.*
Spores ·0125-·015 mm. . *affinis.*

It will be observed that three British species are not included in this artificial key.

Genus **11.** **SCYPHIUM.** *R.*

Sporangia with a single wall, splitting with a deciduous lid, with the margin slightly lacerated; capillitium uniformly grown to the walls of the sporangium, its numerous branches combined into an all-sided net, throughout their whole length filled with small granules of lime; columella either originating with the capillitium or prolonged directly from the stem.—*Rtfki. Mon.*, 148.

27. **Scyphium rubiginosum.** (*Chev.*)

Sporangia globoso-turbinate, together with the thin stem which is twice as long as the sporangium, red-brown, smooth, slightly shining; columella distinct, cylindrical, stout, dark, being a direct prolongation of the stem; capillitium strongly developed, whitish; sporangium dehiscing by a delicate deciduous lid; spores dark-violet, slightly warted, ·014-·0148 mm.—*Rtfki. Mon.*, 148.

On trunks amongst moss. (Fig. 115.)

Physarum rubiginosum, Chev. Fl. Par., 338 (1826); Eng. Fl., v. 315; Cooke Hdbk., No. 1137.

Family 4. DIDYMIACEÆ.

Wall of sporangia single or double, containing lime in the form of crystals, groups of crystals, or single amorphous grains of lime, compacted now and then into a crustaceous mass; capillitium usually of threads, rarely of tubes, always thin, either violet-colour or uncoloured, equally thick through their entire length; threads extending from the base of the sporangium, or from the columella to the walls; either frequently simple, or with a few branches originating at a sharp angle combined into a net; either smooth or provided with equally coloured thickenings, varying according to the species, but of the same substance; granules of lime make their appearance only exceptionally in the threads in certain sporangia, as a kind of monstrocity, and then always in the shape of small crystals; columella in the greater number of instances strongly developed, shape very diverse, and of very different capacity. In the sessile forms either the much thickened lower part of the sporangium at the base furnished very much throughout

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with lime, or more rarely central, free, thin-walled vesicles, filled with lime. In the stipitate forms the columella is either a variously-shaped prolongation of the stem, penetrating into the interior of the sporangium, or the columella consists of a vesicle separated from the sporangium and tube of the stem by a peculiar membrane. Vesicle sometimes divided into numerous cells filled with lumps, or crystals of lime; sporangia simple, rarely æthalium or plasmodiocarp.—*Rtfki. Mon.*, 150.

Genus **12.** **DIDYMIUM.** *Schrad.*

Walls of sporangia single or double, outer wall covered with crystals of lime, either scattered singly over the surface, or compacted into a crustaceous separable coating; sporangia sessile or stipitate, without or with a columella, always splitting irregularly, now and then plasmodiocarpous.—*Rtfki. Mon.*, 160.

Sub-Gen. 1. *Serpularia.*
Plasmodiocarp with single or double walls.

28. **Didymium complanatum.** *(Bat.)*

Plasmodiocarp either cushion-like, flattened, scattered, or else vein-like, creeping, now and then combined into an irregular network; surface covered with grey, but not numerous, crystals; capillitium of very thin threads combined into a dense net, remaining behind in connection with peculiar large cells; spores bright-violet, nearly smooth, ·0075-·008 mm. diam.—*Rtfki. Mon.*, 151.

On leaves, &c. (Figs. 166. 180.)

Lycoperdon complanatum, Batsch., t. 170 (1786).
Didymium serpula, Fr. S. M, iii., 126 (1829); Eng. Fl. v., 314; B. & Br. Ann. Nat. Hist,, No. 1035; Cooke Hdbk., No. 1134.
Physarum confluens, Fckl. Sym. Myc., p. 342 (1869), non Pers.

Sub-Gen. 2. *Cionium.*
Sporangia with single-wall, columella, or, when this is absent, the stem black, more rarely rusty-coloured.

29. **Didymium clavus.** *A. & S.*

Sporangia hat-shaped, flattened, convex, plane at the base, greyish-white, without columella, stipitate; stem short, blackish-brown, shining, seemingly smooth, erect; capillitium of simple threads, or rarely furcate, fusiform, bright-brownish, uncoloured at both ends; spores bright-violet, smooth, ·0065-·0083 mm.—*Rtfki. Mon.*, 153.

On various substances.

Reticularia hemispherica, Bull., t. 446, f. 2)1791).
Physarum clavus, A. & S., t. 2, f. 2 (1805).

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Didymium melanopus β clavus, Fr. S. M., iii., 114 (1829); B. & Br. Ann N. H., No. 110; Cooke Hbk., No. 1118, β.
Didymium hemisphericum, Wallr. Fl. Germ., 2192 (1833).
Didymium clavus, Rabh. Fl. Crypt., 2282 (1844).

30. Didymium farinaceum. *Schrad.*

Sporangia hemispherical or a little flattened, decidedly umbilicate at the base, greyish-white (in the form without lime, black and shining), stipitate; stem rigid, black, shining, or exceptionally ferruginous-brown, usually equal in length to the sporangium, or longer, or shorter and disappearing, being concealed in the umbilicus of the sporangium; columella large, hemispherical, black, of large cells proper to itself, the numerous folds of the membrane imperfectly dividing the cells; cells irregularly filled with small granules of lime, collected in lumps; capillitium of simple threads, permanent, serpentine, bright-brown; spores dull-violet, very spinulose, ·01-·0125 mm.—*Rtfki. Mon.*, 154.

On dead leaves, twigs, &c. (Figs. 128, 171, 174.)

a. **genuinum.** Stem black, shining, equal in length to the porangium, or half as much longer.
(2) **rufipes.** Stem rusty-brown.
β. **elongatum.** Stem three times the length of the sporangium.
γ. **subsessile.** Stem short, disappearing, concealed in the umbilicus of the sporangium.
(2) **confluens.** Sporangia confluent in a series.
δ. **nigrum.** Form entirely without lime, hence with the surface deformed, shining black, stem hidden in the umbilicus, with the cells of the substratum also without lime.

Sphærocephalus niger, Hall, t. 1, f. 2 (1742).
Trichia, Hall, No. 2160, t. 48, f. 2 (1768).
Mucor sphærocephalos, Batsch., p. 157 (1783).
Clathrus sphærocephalos, Rehl. (1786).
Trichia globosa, Vill. Fl. Dauph., 1061 (1789).
Reticularia hemispherica, Bull. t. 446, f. 1 (1791).
Trichia compressa, Trent, p. 229 (1797).
Trichia sphærica, Trent, p. 230 (1797).
Trichia depressa, Trent, p. 231 (1797).
Physarum melanospermum, Pers. Disp., p. 8 (1797).
Didymium farinaceum, Schrad., t. 3, f. 6 (1797); Eng. Fl. v. 313; Cooke Hdbk., No. 1123; Fungi Brit. ii., 521.
Trichia sphærocephala, Sow. t. 240 (1799).
Trichia farinacea, Poir. Ency. viii., 53.
Physarum farinaceum, Pers. Syn., 174 (1801).
Physarum cinerascens, Schum. Saell., 1426 (1803).

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Physarum depressum, Schum. Saell., 1439 (1803).
Physarum globosum, Schum. Saell., 1442 (1803).
Physarum oxyacanthæ, Schum. Saell., 1427 (1803.)
Physarum cinereum, multis?
Physarum clavus, Link. Dis., i., 27 (1809).
Physarum sinuosum, Link. Dis., i., 27 (1809).
Physarum capitatum, Link. Dis., i., 27 (1809).
Diderma muscicola, Link. Dis., i., 27 (1809).
Didymium capitatum, Link. Dis., iii., 27 (1816).
Didymium lobatum, Nees, f. 104 (1817); Cooke Hdbk., No 1129.
Didymium physarioides, Klotsch.
Strongylium minor, Fr. Gast., p. 9 (1817).
Physarum melanopus, Fr. Gast., p. 23 (1817).
Cionium lobatum, Spr. Sys. iv., 529 (1827).
Didymium marginatum, Fr. S. M., iii., 116 (1829).
Didymium melanopus, Fr. S. M., iii., 114 (1829); Berk. Ann. N.H., No. 382; Cooke Hdbk., No. 1118.
Didymium hemisphæricum, Fr. S. M., iii., 115 (1829).
Physarum nigrum, Fr. S. M., iii., 146 (1829); B. & Br. Ann. N. H., No. 1598; Grevillea, v., p. 12.
Cionium farinaceum, Link. Hbk., iii., 416 (1833).
Didymium filamentosum, Wallr., 2187 (1833).

31. Didymium microcarpon. (*Fr.*)

Sporangia exactly globose, with numerous crystals covering the walls, snow-white, as if covered with hoar frost; umbilicate, stipitate, with the very delicate stem impressed at the base; stem usually twice the length of the sporangium, delicately striate, erect, either black and shining, or ferruginous-orange; columella distinct, globose, in some individuals forming a many-celled chamber with pseudo-cells filled with crystals of lime; capillitium of bright-violet threads, rarely branched, combined into a loose net; spores bright-violet, nearly smooth, ·0058-·0065 mm. diam.—*Rtfki. Mon.*, p. 157.

On rotten wood, dead leaves, &c. (Figs. 133, 177.)

Lycoperdon stipitatum, Retz. Vet. Ac. Handl. (1769).
Trichia hemispherica, Trent., p. 228 (1797).
Physarum nigripes, Lk. Diss., i., 27 (1809); Ditm., t. 42.
Trichia alba, Purt. Mid. Fl., iii., 1113 (1817).
Cionium xanthopus, Ditm., t. 43 (1817).
Cionium iridis, Ditm., t. 7 (1817); Nees, f. 106.
Physarum microcarpon, Fr. Gast., p. 23 (1818).
Didymium lobarum β stipitatum, Somm. Fl. Lapp, 210 (1825).
Didymium nigripes, Fr. S. M., iii., 119 (1829); Eng. Fl., v., 313; Cooke Hdbk., No. 1124.
Didymium xanthopus, Fr. S. M., iii., 120 (1829); Berk. Ann. N. H., No. 111; Cooke Hdbk., No. 1126.

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Didymium iridis, Fr. S. M., iii., 120 (1829).
Didymium microcephalum, Chev. Byss. f. 11 (1837).
Didymium melanopus, Wallr. Fl. Germ., 2184 (1837).
Didymium Wallrothii, Rabh. Fl. Crypt., 2289 (1844).
Didymium porphyropus, DR. & M., Fl. Alg., 409 (1846).

32. Didymium physarioides. (*Pers.*)

Sporangia not numerous, cylindrical, flattened, crowded together upon a common strongly-developed substratum, as it were combined altogether into one; sporangia irregularly hemispherical, difformed, either without a stem, or with a very short stem attached to the substratum; columella large, common to all the sporangia, forming a chamber divided into pseudo-cells, filled with irregular ganglions composed of small granules of lime; capillitium of stout threads, usually simple, only rarely branched, furnished with numerous fusiform dull-violet swellings; spores dull-violet, with a thick membrane, very spinulose, ·012-·014 mm.—*Rtfki. Mon.*, 153.

On stumps, moss, &c. (Figs. 147, 175.)

Spumaria physarioides, Pers. Sym., 163 (1809).
Didymium physarioides, Fr. Gast., 21 (1817); Eng. Fl., v., 314; Cooke Hdbk., No. 1132.

33. Didymium sinapinum. *Cooke.*

Sporangia clavate or cylindrical, attenuated at the base, standing on a membranaceous hypothallus, sometimes singly, more usually in small clusters, nearly black below, farinaceous and sulphury-yellow above, as if sprinkled with mustard powder; columella not evident; capillitium very scanty, of thin threads, which are sometimes entirely absent; external scales of the sporangium containing yellow granules of lime; spores violet, ·0075 mm. diam., nearly smooth.

On dead leaves. (Fig. 245.)

A very curious, distinct, and apparently undescribed species, which we have only met with once, at Forden.

Sub-Genus 3. *Acioniscium.*

Walls of sporangia single or double; columella snow-white or brownish-white, as also the stem when present.

34. Didymium squamulosum. *A. & S.*

Sporangia either hemispherical and flattened, or exactly globose, always with the stem slightly umbilicate at the base; stem snow-white, entering within the sporangium, and expanding into a glo-

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bose snow-white columella ; Lower wall of sporangium and columella smooth, upper part when mature split into simple oval scales; threads of capillitium thin-sided, without colour, spreading out from the columella into numerous branches at a very sharp angle ; spores bright violet, almost smooth, ·0083-·01 mm.—*Rtfki. Mon.*, 159.

On wood, dead leaves, &c. (Fig. 148.)

var. *a.* **genuinum.**

Sporangium reaching 1 mm. broad, hemispherical, flattened at the base, and umbilicate, stem equal in length to the sporangium, slightly longitudinally furrowed ; columella distinct, globose, snow-white, upper membrane of sporangium cracked when mature, with numerous oval scales, threads of capillitium uncoloured.

β **leucopus.**

Sporangium $\frac{1}{3}$-$\frac{1}{2}$ mm. broad, exactly globose, faintly umbilicate at the base, or not umbilicate; stem short, sturdy, much furrowed longitudinally, membrane of sporangium when mature not cracked, with simple scales; threads of capillitium uncoloured.

γ **costatum.**

Sporangium irregularly hemispherical or lenticularly flattened, seemingly sessile, the short stem disappearing, very much longitudinally plicate, wide at the base, grown to the substratum ; membrane of the sporangium when mature not cracked, with simple scales ; threads of capillitium uncoloured.

δ Plasmodiocarp flattened, veined, without columella, and without stem.

Reticularia hemispherica, Bull., p. 93 (1791).
Diderma squamulosum, A. & S., t. 4, f. 5 (1805).
Didymium globosum, v. stipitatum, Schwarz. Ac. Holm., p. 114 (1815).
Licea stipitata, DC. Fl. Fr., No. 670 (1815).
Tubulina pedicellata, Poir. Ency., v., p. 373.
Cionium farinaceum, Nees., f. 106 b. (1816).
Cionium squamulosum, Spr. Sys., iv., 528 (1827).
Didymium herbarum, Fr. S. M., iii., 120 (1829).
Didymium leucopus, Fr. S. M., iii., 121 (1829); Cooke Hdbk., No. 1127.
Didymium costatum, Fr. S. M., iii., 118 (1829).
Physarum liceoides, Duby. Bot. Gall., ii., 864 (1830).
Didymium filamentosum, Wallr. Fl. Ger., No. 2187 (1833).
Didymium squamulosum, Fr. S. M., iii., 118; Eng. Fl., v. 312; Cooke Hdbk., No. 1122.

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35. Didymium dædaleum. *B. & Br.*

Sporangia connate, sinuated, forming a dædalioid mass of the same colour as the stem, but sprinkled with white meal; stems reddish-brown, inclining to orange, connate, as if composed of a mass of little flat membranes; capillitium white, very variable in width, being in parts broad, flat, and membraneous; spores violet-black, globose, smooth.—*B. & Br. Ann. Nat. Hist.*, No. 385; *Cooke Hdbk.*, No. 1131.

In a cucumber frame.

36. Didymium pertusum. *B. & Br.*

Scattered. Sporangia white, mealy, depresso-globose, deeply but narrowly umbilicate; stem attenuated upwards, rufous; columella central, white; capillitium brownish; spores nearly black.—*Berk. Eng. Fl.* v. p. 313; *Cooke Hdbk.*, No. 1125.

On dead herbaceous stems.

[*Didymium Sowerbeii*, Berk. Eng. Fl., v., 313; Sow. t. 412, f. 3; Cooke Handbk., No. 1128, is so imperfectly known that it is not included here.]

DIDYMIUM.

A. Wall single or double; columella entirely wanting; plasmodiocarpia.
- Plasmodiocarp with double wall; capillitium with coloured cells . *dubium.*
- Plasmodiocarp with single wall; capillitium relatively permanent, with large coloured cells . . . COMPLANATUM.

B. Wall single or double; columella developed in the typical forms; sporangia usually simple, rarely plasmodiocarpia.

I. Usually with columella, but when absent the stem at least black or brown-black.
- † Without columella . . . CLAVUS.
- †† With columella.
  - * One columella common to many sporangia . . . . PHYSARIOIDES.
  - ** Each sporangium provided with a separate columella.
    - Columella hemispherical, many celled; cells filled with small grains, or lumps of lime . FARINACEUM.
    - Columella globose, many celled; cells filled with small crystals of lime . . . MICROCARPON.

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II. Columella usually snow-white, rarely straw or flesh-coloured, with similar stem.
† Wall of sporangium double . . *præcox.*
†† Wall of sporangium single.
* Sporangium sessile.
Spores very spinulose, large; columella usually coloured; capillitium fasciculate . *confluens.*
Spores almost smooth, smaller; columella usually snow-white; capillitium combined into a net . . . *effusum.*
** Sporangium stipitate.
! Columella globose.
Lower wall of sporangium fiting close to the smooth columella; capillitium of simple threads . . . SQUAMULOSUM.
Lower wall of sporangium not close to the convex columella, which has numerous rough projections from which rise bundles of the threads of the capillitium . . . *Fuckelianum.*
!! Columella discoid, or arcuate at the edge, and bent downwards; capillitium without colour . . . . *macrospermum.*
Capillitium coloured brown . *discoideum.*

Genus **13.** **CHONDRIODERMA.** *Rtfki.*

Peridium sessile or stipitate, splitting irregularly, or in a stellate manner; wall of peridium single or double; outer wall covered with shapeless granules of lime, or crustaceous by their accumulation, separated from the inner one (when present) by a considerable space filled with air; inner wall delicate, containing no lime, iridescent; columella usually present.—*Rtfki. Mon.*, p. 167.

Sub-Genus 1. *Monoderma.*

Wall of sporangium single, covered on the outside with granules of lime in one stratum.

This sub genus includes—
Ch. Alexandrowiczii.
Ch. pezizoides.
Ch. inflatum.
Ch. reticulatum.
None of which are British.

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Sub-Genus 2. *Pseudo-diderma.*

Wall of sporangium single, covered on the outside with masses of grains of lime, often falling away in patches.

37. Chondrioderma niveum. *Rtfki.*

Sporangia exactly hemispherical, or by mutual pressure less regular, from 2-3 mm. wide; sessile, snow-white, with very thick walls; columella large, regular, little flattened, rusty-brown; capillitium strongly developed, of stout, stiff, simple threads, with only a few expansions in the upper portion, dull violet; spores dark violet, warted, ·01-·0116 mm. diam.—*Rtfki. Mon.*, 170.

Chondrioderma niveum, Rtfki. Mon., pp. 170 (1875); Berk. & Br. Ann. N. Hist., No. 1594; Grevillea, v., p. 12.

38. Chondrioderma physarioides. (*DC.*)

Sporangia sessile, of irregular form, roundish, 1-3 mm. diam., convex, or slightly flattened, with the sides mutually compressed, chalky-white; the wall crustaceous with deposits of lime; columella not evident, or very insignificant, entirely flat, dull ochre; capillitium of very thin, delicate, uncoloured threads combined into a flimsy net; spores violet, scarcely warted, ·0125 mm. diam.—*Rtfki. Mon.*, 170.

Spumaria physariodes, DC. Fl. Fr., vi., p. 101, not Pers.
Diderma deplanatum, Fr. S. M., iii., p. 110; Eng. Fl., v., 312; Cooke Hdbk., No. 1116.
Leocarpus deplanatus, Fr. S. V. S., 450.

39. Chondrioderma Michelii. (*Lib.*)

Sporangia lenticular, snow-white, with a crust-like deposit of lime, which falls away, either sessile or stipitate; stem ochrey-white, with very plicate walls, the folds extending also to the lower side wall of the sporangium, and there uniting in radiating, net-like, convex thickenings; columella in the sessile form lenticular, convex, red-brown; in the stipitate form more plane, separated from the tubes of the stem by a proper wall; threads of the capillitium serpentine, colourless, very thin, rarely only furcate, combined into a loose net; spores bright violet, smooth, ·0083 mm. In the sessile form readily blending two, or from three to five together.

On dead twigs, &c. (Figs. 131, 146, 149, 150.)

a. **stipitatum.** Sporangia discoid, with the edge on the lower side rounded; stem rigid, puckered, the folds extending in the form of reticulated convex veins along the under side; columella insignificant, almost plane, fleshy-red.

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β. **sessile.** Sporangia discoid or lenticular, flattened, sessile without stem; columella usually convex, flesh-red, or flesh-brown. Very readily confluent.

Diderma contortum, Hoffm., t. 9, f. 2a (1795).
Reticularia contorta, Poir. Ency., vi., 182.
Reticularia hemispherica, Sow., t. 12 (1797).
Physarum depressum, Schum. Saell., No. 1439 (1803); Fl. Dan., t. 1972, f. 2.
Diderma physarioides, Schum. Herb.
Diderma depressum, Fr. S. M., iii., 108 (1829).
Diderma lenticulare, Wallr. Herb.
Didymium Michelii, Lib. Exs., ii., 180 (1832).
Didymium hemisphericum, Berk. Eng. Fl., v., p. 312 (1836); Cooke Hdbk., No. 1119.
Physarum Michelii, Corda. Ic., v., f. 33 (1842).
Chondrioderma Michelii, Rostfki. in Fckl. Sym. Myc., Nach. 2, p. 74 (1873).

40. Chondrioderma spumarioides. (*Fr.*)

Sporangia irregular in form, either snow-white on concolorous, or greyish on flesh colour, always standing in clusters on a strongly developed hypothallus; columella either not recognisable or snow-white, free in the centre, or multiform, flesh colour; capillitium of colourless threads or bright violet, combined into a net; spores violet, very spinulose, ·0083-·0137 diam.—*Rtfki. Mon.*, 174.

On leaves, moss, &c. (Figs. 142, 145, 151.)

α. **carcerina.** Sporangia very small, $\frac{1}{3}$-$\frac{1}{2}$ mm. diam., snow-white, the surface farinaceous, gregarious, narrowed, standing on a whitish or rusty hypothallus, containing deposits of lime; columella either not evident, or central, vesicular, white. Here belongs the form which contains a large quantity of lime. Form of the sporangia globose, or mutually compressed, and narrowed at the base, which is extended into a very short stem. (Figs. 142-145.)

β. **didermoides.** Sporangia irregularly angular, flattened, $\frac{1}{3}$-$\frac{3}{4}$ mm. diam., grey, surface smooth, gregarious, standing on an ochrey or flesh-red strongly developed hypothallus; columella variously developed, always, however, flesh-red at the base. (Fig. 151.)

Spumaria physarioides, Pers. Syn., 163 (1801).
Physarum didermoides, Fries Herb.
Spumaria alba, Schum. Saell., No. 1414 (1803); Fl. Dan., t. 1798, f. 2.
Didymium spumarioides, Fr. Gast. 20 (1818).

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Physarum stromateum, Link. Hdbk., iii., 409 (1833).
Carcerina spumarioides, Fr. S. V. S., 451 (1849).
Diderma spumarioides, Fr. S. M., iii., p. 104; Eng. Fl., v., p. 311; Cooke Hdbk., No. 1109.

Sub-Genus 3. *Diderma.*

Sporangia with double walls, the outer containing lime, developed in a crustaceous manner, considerably divided from the thin inner wall, which is without lime, and often iridescent.—*Rtfki. Mon.*, 177.

41. Chondrioderma difforme. (*Pers.*)

Sporangia sessile, roundish, deformed, outer wall crustaceous, chalky-white, inner either opaque or beautifully iridescent, without columella or capillitium, or with a scarcely evident capillitium; spores dark-violet, smooth, ·01-·0125 mm. diam.—*Rtfki. Mon.*, 177.

On bark, leaves, twigs, herbaceous stems, &c. (Figs. 137, 164, 165.)

Reticularia angulata, Pers., in Gmel., p. 1472 (1791).
Diderma difforme, Pers. Disp. p. 9 (1797); Icon. Pict., t. 12, f. 3-5; Nees, f. 105.
Licea cæsia, Schum. Saell, 1500 (1803).
Physarum difforme, Link. Dis., i., 27 (1809).
Amphisporium versicolor, Fr. Gast. 19 (1818).
Licea alba, Nees, in Kze. Myk. Hft., ii., 66 (1823).
Lycogala minutum, Grev. S. C., Fl. t. 40 (1823).
Reticularia pusilla, Fr. Orb. Vet., i., 147 (1825).
Diderma cyanescens, Fr. S. M., iii., 109 (1829); Eng. Fl., v., p. 312; Cooke Hdbk., No. 1115.
Physarum cæsium, Fr. S. M., iii., 147 (1829).
Physarum album, Fr. S. M., iii., 147 (1829); Letell., t., 710, f. 4; Cooke Hdbk., No. 1140.
Didymium difforme, Duby. Bot. Gall., ii., 858 (1830).
Diderma nitens, Klotsch., in Hook. Herb.; Eng. Fl. v., p. 312; Cooke Hdbk., No. 1113.
Diderma Neesii, Corda Ic., ii., f. 58 (1838).
Leocarpus cyanescens, Fr. S. V. S., 450 (1849).
Leocarpus nitens, Fr. S. V. S., 450 (1849).
Diderma Libertianum, Fres. Beit., t. iv., f. 16-27 (1850).
Didymium Libertianum, DeBary Mycetozoa (1864).

42. Chondrioderma globosum. (*Pers.*)

Sporangia globose, with a narrow base on the substratum, or very strongly developed, containing very much lime, seated upon a chalky-white hypothallus; outer wall crustaceous, chalky-white, inner wall almost cinereous or beautifully iridescent; columella

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usually very small, globose, or ellipsoid, chalky-white; capillitium bright-violet, combined into a thick net; spores dull-violet, faintly spinulose, ·0083 mm. diam.—*Rtfki. Mon.*, 180.

On dead leaves. (Fig. 138.)

Mucilago 7, Mich., t. 96, f. 6 (1729).
Lycogala, Hall, No. 2143 (1763).
Reticularia sphæroidalis, Bull., 446, f. 2 (1791).
Diderma globosum, Pers. Disp., t. 1, f. 4, 5 (1797); Eng. Fl., v., p. 312; Cooke Hdbk., No. 1114.
Didymium candidum, Schrad. Nov. Gen., 25 (1797).
Didymium globosum, Chev. Fl. Par., t. 9, f. 28 (1827).
Physarum sphæroides, Chev. Fl. Par., 339 (1827).
Cionium globosum, Spr. iv., 529 (1827).

Sub-Genus 4. *Leangium.*

Wall of sporangium single, crustaceous, very much loosened from the inner mass of spores and capillitium, the latter often covered by a single stratum of flattened, polygonal, angular, close-fitting spores; sporangium often splitting in a stellate manner.

43. Chondrioderma Trevelyani. (*Grev.*)

Sporangia ovate or globose, sessile, splitting in a stellate manner into numerous, regular, linear, somewhat reflexed, pointed laciniæ; columella very small, globose; capillitium —— ?; spores, —— ? —*Rtfki. Mon.*, 182.

On *Bryum ligulatum.* (Figs. 161-163.)

Leangium Trevelyani, Grev., S. C., Fl. t. 132 (1825).
Cionium Trevelyani, Spr. Sys., iv., 529 (1827).
Diderma Trevelyani, Fr. S. M., iii, 105 (1829); Eng. Fl., v., 311; Cooke Hdbk., No. 1111.
Polyschismium Trevelyani, Corda Ic., v., p. 20 (1842).

44. Chondrioderma radiatum. (*Linn.*)

Sporangia roundish or lenticular, flattened, almost sessile, or with a stiff, erect, upwards thickened stem, umbilicate below, brown-white, when mature splitting, in a stellate manner, into from four to eight unequal but regular divisions; columella always distinct, either globose or ovate; threads of the capillitium violet, either simple or fasciculate, expanded above here and there in globose swellings; spores violet, spinulose, ·0092-·0125 mm. diam.—*Rtjki. Mon.*, 182.

On bark of trees, &c. (Figs. 155, 156, 152, 153 and 170.)

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Lycoperdon radiatum, Linn. sp., 1654 (1753).
Didymium stellare, Schrad., t. 5, f. 3-4 (1797).
Diderma stellare, Pers. Syn., 164 (1801).
Diderma umbilicatum, Pers. Syn., 165 (1801); Eng. Fl., v. 310; Cooke Hdbk., No. 1106.
Diderma crassipes, Schum. Saell., 1421 (1803).
Reticularia umbilicata, Poir. Ency.
Didymium geaster, Link. Diss., ii., 42 (1809).
Leangium stellare, Link. Diss., ii., 42 (1809).
Cionium stellare, Spr. Sys., iv., 529 (1827).
Cionium umbilicatum, Spr. Sys., iv., 529 (1827).
Leangium umbilicatum, Rabh. Fl. Crypt., 285 (1844),
Didymium complanatum, Fckl. Sym. Myc., 341 (1869).

45. Chondrioderma floriforme. (*Bull.*)

Sporangia globose, stipitate, with an elongated stem, very much crowded on a strongly-developed hypothallus, bright-brown, splitting when mature in a stellate manner in irregular divisions cut to the base; columella at the first ovate, stipitate, bright-brown; capillitium of violet threads combined into a net, provided with numerous irregular thickenings; spores dull-violet, rarely spinulose, ·01-·0125 mm.—*Rtfki. Mon.*, 184.

On decaying trunks, &c.

Sphærocarpus floriformis, Bull., t. 371 (1791).
Stemonitis floriformis, Gmel. Sys., 1469 (1791).
Lycoperdon floriforme, With. Arr., iv., 379 (1792).
Reticularia floriformis, Poir. Ency.
Didymium floriforme, Schrad., N. G., 25 (1797).
Diderma floriforme, Pers. Syn., 164 (1801), Fr. S. M., iii., p. 99; Berk. Eng. Fl., v., 310; Cooke Hdbk., No. 1105.
Diderma spurium, Schum. Saell., 1422, (1803).
Leangium floriforme, Link. Diss., t. iii. (1809).
Leangium lepidotum, Ditm., t. 21 (1817).
Cionium lepidotum, Spr. Sys. iv., 529 (1827).
Cionium floriforme, Spr. Sys. iv., 529 (1827).
Diderma lepidotum, Fr. S. M., iii., 100 (1829).

46. Chondrioderma Œrstedtii. *Rtfki.*

Sporangia, together with the stem pyriform, brownish-white, wholly without columella; when mature splitting stellately into four or six irregular laciniæ, cut to the base; decorated with glistening glassy warts; capillitium of violet threads combined into a close net; spores bright-violet, delicate, rarely spinulose, ·0116-·0132 mm.—*Rtfki. Mon.*, 184. (Figs. 154, 157.)

Chondrioderma Œrstedtii, *Rtfki. Mon.*, p. 184; Berk. & Br. Ann. Nat. Hist., 1593; Grevillea, v., p. 12.

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47. Chondrioderma lucidum. (*B. & Br.*)

Sporangia subglobose, sessile, either scattered or crowded, splitting in an irregular stellate manner, bright reddish-yellow, internally yellow, mass of spores globose; capillitium brown, irregular at the points of ramification, yellowish; spores globose, violet-black, ·0125 mm. diam., minutely echinulate.——*Ann. Nat. Hist.*, No. 938.

On moss and *Jungermannia*.

Diderma lucidum, B. & Br. in Ann. Nat. Hist., No. 938, t. 15, f. 9; Cooke Hdbk., No. 1110.

This and the following species are not contained in Rostafinski's Monograph.

48. Chondrioderma Carmichaelianum. (*B.*)

Sporangia perfectly sessile, outer wall brick-red, inner white, intimately connected with the outer, splitting into many revolute rays; columella large, spores dark.—*Eng. Fl.*, v., p. 34.

On moss.

Diderma Carmichælianum, Berk. Eng. Fl., v., p. 34; Cooke Hdbk., 1112.

CHONDRIODERMA.

I. Walls of sporangia single, with the lime either in grains or crustaceous deposits. (*Monoderma.*)

A. Plasmodiocarp.
- Vein-like, convex, columella large . *anomalum.*
- Net-like, flattened, without columella . *reticulatum.*

B. Sporangia simple.
- † Walls simply covered with granules of lime; form irregular, without columella . . . . . *Alexandrowiezii.*
- Hemispherical, with large columella . NIVEUM.
- †† Wall crustaceous.
  - * Without columella . . . . PHYSARIOIDES.
  - ** With columella.
    - Sporangia sessile or stipitate, discoid, margin of sporangium after losing the spores, saucer-shaped. MICHELII.
    - Sporangia much crowded on a strongly-developed hypothallus . SPUMARIOIDES.
    - Sporangia exactly globose, with columella . . . . . *fallax.*
    - Sporangia of irregular form . *Friesianum.*

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II. Wall of sporangium double, the outer much separated from the inner . . . (*Diderma.*)
A. Capillitium almost non-existent . . DIFFORME.
B. Capillitium from the bottom to the top many times branched, fasciculate . . *Sauteri.*
C. Capillitium combined into a net.
† Threads provided with numerous hook-like thickenings . . . . *calcareum.*
†† Capillitium without such thickenings.
Sporangia globose, chalky-white, with concolorous columella . . GLOBOSUM.
Sporangia hemispherical, reddish flesh colour, with concolorous columella . *testaceum.*
Sporangia globose, leather-coloured, columella filled with crystals of lime *vaccinum.*
III. Wall of sporangium single, but much separated from the inner naked mass of spores and capillitium . . . (*Leangium.*)
A. Sporangia provided with a columella, splitting in a stellate manner, the divisions much crowded, reflexed, equal, sharp pointed . . . . . TREVELYANI.
Divisions not numerous (4 to 8); sporangia lenticular, either sessile or stipitate . . . . . RADIATUM.
Divisions not numerous and irregular; sporangia exactly globose, with an elongated stem . . . . FLORIFORME.
B. Without columella.
Splitting in a stellate manner, divisions not numerous, provided with glassy shining warts . . . . . ŒRSTEDTII.
Splitting either irregularly, or with a central opening, or a longitudinal fissure . . . . . *Stahlii.*

[This table was printed by Rostafinski previous to the proposal of the sub-genus *Pseudo-diderma*, and was not altered in conformity therewith, hence it scarcely corresponds in some details with the arrangement of the species, but we have not deemed it prudent to make any emendations.]

Genus **14.** **LEPIDODERMA.** *DeBary.*

Sporangium sessile or stipitate, now and then plasmodiocarp; walls single, covered with numerous very large scales, compounded of a small quantity of its substance, combined with a large quantity of lime; scales either loose from the wall, or enclosed in lenticular cavities of the membrane; columella usually evident.—*Rtfki. Mon.*, 187.

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49. Lepidoderma tigrinum. *Schrad.*)

Sporangia hemispherical, flattened, or lenticular, black, variegated with vitreous straw-coloured scales, strongly umbilicate beneath, stipitate; stem rigid, thick, reddish ferruginous, either tall, equal in thickness, or short, imperceptibly widened above; columella brown, either hemispherical, convex, or almost globose; threads of the capillitium simple, dull-violet, without thickenings; spores dull-violet, very spinulose, ·01-·0125 mm. diam.—*Rtfki. Mon.*, 187.

On decayed wood, moss, &c. (Fig. 159, 160.)

Didymium tigrinum, Schrad., t. 6, f. 2-3 (1797); B. & Br. N. H., No. 383; Cooke Hdbk., No. 1121.
Physarum tigrinum, Pers. Syn., 174 (1801); Fl. Dan., t. 1434, f. 2.
Physarum squamulosum, Pers. Syn., 174 (1801).
Trichia tigrina, Poir, Ency., viii., 53.
Trichia squamulosa, Poir. Ency., viii., 53.
Cionium tigrinum, Lk. Hdbk., iii., 410 (1833).
Didymium rufipes, Fr. S. M., iii., 116 (1829).
Leangium squamulosum, Fr. Stirp. Femsj., 13 (1825).

Family 5. SPUMARIACEÆ.

Æthalium or sporangium provided with a central columella; capillitium extending in a radial manner from the columella to the walls of the sporangium, the threads combined into a net, with polygonal meshes.—*Rtfki. Mon.*, 189.

Genus **15. DIACHÆA.** *Fr.*

Sporangium stipitate; stem prolonged within the sporangium as a columella, and, together with it, filled with small granules of lime; capillitium of threads extending from the rigid columella to the wall of the sporangium, becoming thinner and thinner, combined into a thick net.—*Rtfki. Mon.*, 190.

50. Diachæa leucopoda. (*Bull.*)

Sporangia cylindrical, obtuse, stipitate; stem short, thickened at the base, snow-white, prolonged within the sporangium into a cylindrical, obtuse, not reaching the apex, snow-white columella; threads of the capillitium whitish, thin; spores translucent, violet, beautifully iridescent.—*Rtfki. Mon.*, 190.

On leaves, &c. (Fig. 178.)

Trichia leucopoda, Bull, t. 502, f. 2 (1791).
Stemonitis elegans, Trent. in Roth Cat., 220 (1797).
Stemonitis leucostyla, Pers. Syn., 186 (1801).

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Stemonitis leucopoda, DC. Fl. Fr., ii., 257 (1805).
Diachæa elegans, Fr. Stirp. Femsj., p. 84 (1825); Fr. S. M., iii., 156; Berk. Ann. N.H., No. 112; Cooke Hdbk., No. 1154, fig. 131.
Diachæa leucopoda, Rtfki. Mon., p. 190 (1875).

Genus **16.** **SPUMARIA.** *Pers.*

Æthalium complex, with numerous dendritic branches, each sporangium being surrounded by an outer, common, meerschaum-like cortex; sporangia tree-like, on the outside covered with small crystals of lime, provided within with a central columella, extending also to the branches; capillitium passing from the columella to the walls of the sporangium, forming a thick net; cortex composed of empty cells (their walls enclosing small granules of lime) touching each other, snow-white.—*Rtfki. Mon.*, 191.

51. **Spumaria alba.** (*Bull.*)

Columella empty, cylindrical, branched, not reaching to the apex of the sporangia; threads of capillitium very thick, formed into a thick network, very much thickened at the points of junction; spores dull-violet, very spinulose.—*Rtfki. Mon.*, 191.

On grass, &c. (Figs. 158, 172, 175.)

Mucilago 2, Mich., t. 96, f. 2 (1729).
Mucorii, Gled. Meth., p. 160 (1753).
Mucilago crustacea alba, Batt., t. 40, f. 9 H. I. (1755).
Mucilago, Hall., No. 2129 (1768).
Byssus bombycina, Retz. V. Handl., 251 (1769).
Mucilago filamentosa, Bonamy., t. 3 (1772).
Reticularia alba, Bull. t. 326 (1791).
Spumaria mucilago, Pers. Disp., t. i., f. a b c (1797).
Reticularia ovata, var. With. Arr., iv., 1978 (1803).
Spumaria cornuta, Schum. Saell., 1415 (1803); Fl. Dan., t. 1978, f. 1.
Spumaria alba, DC. Fl. Fr., ii., 261 (1805); Fr. S. M., iii., 25; Eng. Fl., v., 310; Cooke Hdbk., No. 1103.
Spumaria alba, a. laminosa, β cornuta, Fr. S. M., iii., 95 (1829).
Didymium spumarioides, Fr. S. M., iii., 121 (1829).
Diderma spumariæforme, Wallr. Fl. Germ., 2208 (1833).

Order III. AMAUROCHÆTEÆ.

Single sporangium, or æthalium, without lime; spores capillitium, and columella almost always uniformly black, or brownish-violet coloured.—*Rtfki. Mon.*, 193.

Family 6. Stemonitaceæ.

Walls of sporangia either not evident, or very evanescent; elongated stem extending within the sporangia as a columella,

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originating from numerous places on its surface the threads of the capillitium, which are branched and combined into a net; sporangium always simple.—*Rtfki. Mon.*, 193.

Genus **17.** **STEMONITIS.** *Gled.*

Sporangia cylindrical, shortly stipitate, gregarious; hollow stem lengthened in the centre, attenuated upwards as a columella; capillitium formed of numerous threads radiating from the columella, combined into a loose net, the ultimate branches united into a network at the surface, parallel to the walls of the sporangium, extended and combined by the help of very short, delicate perpendicular (to the net) ends.—*Rtfki. Mon.*, p. 193.

52. **Stemonitis fusca.** *Roth.*

Sporangia cylindrical, obtuse, standing on a strongly developed hypothallus; columella approaching the apex of the sporangium; hypothallus, stem, columella, capillitium, and mass of spores violet-black; surface of the net of the capillitium with the meshes very small, less, or little larger than the spores; spores bright violet, almost smooth, ·0066-·0092 mm. diam.—*Rtfki. Mon.*, 193.

α. **major.** Sporangium, with stem 7-12 mm. high.
β. **minor.** Sporangium, with stem 4-7 mm. high.

On rotten wood. (Fig. 40.)

Lycoperdon capite cylindracea, Rupp. Jenn., 304 (1718).
Clathroidastrum obscurum, Mich., t. 94, f. 1 (1729).
Embolus nigerrimus, Hall, t. 1, f. 1 (1742).
Clathrus nudus, Linn. Fl. Suec., 1263 (1745).
Stemonitis I, Gled, Meth., 141 (1753).
Embolus, Hall, 2137, t. 48, f. 1 (1768).
Tubulifera cremor, Fl. Dan., t. 659, f. 1 (1777).
Tremella typhina, Willd. Fl. Ber., 420 (1787).
Mucor araneosus, Jacq. Misc., t. 15 (1778).
Stemonitis fusca, Roth. Mag. Bot., p. 26 (1782); Ehr. Ber., f. 5; Grev. S. C. Fl., t. 170; Corda Ic., ii., f. 87; Eng. Fl., v., 317; Cooke Hdbk., 1155, fig. 132, Fung. Britt., ii., 522.
Trichia nuda, With. Arr., iv., 477 (1792).
Stemonitis fasciculata, Pers. Syn., 187 (1801).
Stemonitis typhoides, Auct.

53. **Stemonitis ferruginea.** *Ehr.*

Sporangia cylindrical, obtuse, gregarious, standing on a strongly developed hypothallus; columella cleaving the apex of the sporangium, with a few threads of the capillitium; hypothallus, stem, columella, and capillitium violet-black, but the mass of spores

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ferruginous-cinnamon ; surface of the net of the capillitium with very small meshes, but little larger than the spores; spores bright ferruginous, ·0053-·0075 mm. diam.—*Rtfki. Mon.*, 196.

On rotten wood. (Figs. 31-39, 41-44, and 50.)

Stemonitis typhina, Willd. Ber., 408 (1787).
Clathrus nudus, Bolt., t. 93, f. 1 (1789).
Trichia axifera, Bull., t. 447, f. 1 (1791).
Stemonitis fasculata, Pers. Syn., 187 (1801).
Stemonitis violacea, Schum. Saell., 1491 (1803).
Stemonitis fasciculata, DC., Fl. Fr., ii., 256 (1805).
Stemonitis ferruginea, Ehr. Syl. Ber., f. vi. a b (1818); Cooke Hdbk., No. 1156.
Stemonitis decipiens, Nees. Nov. Act. Leop., xvi., 95, (1821).
Stemonitis heterospora, Oudem. Ned. Kr. Arch. i., 167 (1872).

Genus **18.** **COMATRICHA.** *Preuss.*

Sporangium cylindrical or globose, stipitate ; stem prolonged immediately within the walls of the sporangium as a columella, usually to nearly its length ; columella attenuated upwards, reaching at least three-fourths the height of the sporangium ; capillitium originating from the columella, usually its numerous forked threads combined into a net, but at the surface of the sporangium not formed into a network parallel to the walls; walls of sporangium usually very evanescent, now and then even falling away entirely.—*Rtfki. Mon.*, 197.

54. **Comatricha typhina.** *Roth.*

Sporangia growing in company, but not crowded, cylindrical, obtuse, those in the centre narrower, a little bent on one side ; stem shorter than the sporangium; columella in the centre derived from the lengthened stem, extending to the apex, and then cleaving it with the numerous ends of the threads of the capillitium ; threads of the capillitium numerous, flexuous, dull brownish, with numerous branches, formed into a very intricate net ; walls of the sporangium always thin ; spores bright-violet, smooth, ·0046-·0067 mm. diam.—*Rtfki. Mon.*, 198.

a. **genuina.** Sporangium, with stem, 2½ to 4 mm high.
β. **pumila.** Sporangium, with stem, 2 mm. high.

On rotten wood. (Figs. 46, 47.)

Clathroidastrum obscurum, Mich., t. 94, f. 2 (1729).
Mucor capitulo fusco, Scop. Fl. Carn., 66 (1760).
Mucor stemonitis, Scop. Fl. Carn., 493 (1772); Schff., t. 296.
Embolus lacteus, Jacq. Musc. i., t. 6 (1778).

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Clathrus nudus, Fl. Dan., t. 758 (1782).
Clathrus pertusus, Batsch., f. 176 (1783).
Stemonitis typhina, Roth.-Fl. Germ., i, 547 (1788); Pers. Obs., i., 57.
Stemonitis filicina, Schrk. Fl. Bav., 1782 (1789).
Trichia typhoides, Bull., t. 477, f. 2 (1791).
Stemonitis typhoides, DC., Fl. Fr., ii., 257 (1805); Cooke Hdbk., No. 1157.
Stemonitis bicolor, Fries. herb.
Stemonitis leucopoda, Fr. Gast. 16 (1817).
Stemonitis pumila, Corda Ic., v., 37 (1842).

55. Comatricha Friesiana. *DBy.*

Sporangia either globose, or ovate, or ellipsoid, erect, ½-1½ mm. high; stem subulate, black, shining, 1½-3 mm. long, now and then even to 6 mm., penetrating within the sporangium as a columella; columella reaching from half to three-quarters the height of the sporangium, then spreading out in numerous threads; capillitium of arcuate flexuous threads, combined into a net, not extending anywhere as far as the margin of the sporangium in free ends, almost equally thick throughout the entire length; spores violet-brown, with a thick but smooth membrane, ·0083-·01 mm. diam. —*Rtfki. Mon*, 199.

var. *α.* **obovata.**
var. *β.* **oblonga.**

On rotten wood. (Figs. 51, 56.)

Mucor embolus, Linn. Sp., 1185 (1753).
Lycogala, Hall, 2146? (1768).
Stemonitis reticulata, Trent, p. 223? (1797).
Stemonitis nigra, Pers. Gmel. Sys., 1467 (1791).
Stemonitis atrofusca, Pers. Disp., 11 (1797).
Stemonitis atrofusca, *β nigra*, Pers. Disp., 54 (1797).
Stemonitis ovata, Pers. Syn., 189 (1801); Berk. Eng. Fl. v., p. 317; Cooke Hdbk., No. 1158.
Trichia mucoriformis, Schum. Saell., 1469 (1803).
Stemonitis violacea, Schum. Saell., 1491 (1803).
Stemonitis nigra, Schum. Saell., 1493 (1803).
Stemonitis globosa, Schum. Saell., 1494 (1803).
Trichia alba, Sow., t. 259 (1818).
Stemonitis obtusata, Fr. Sym. Gast., 17 (1818); Eng. Fl., v., p. 317; Cooke Hdbk., No. 1159.
Comatricha obtusata, Preuss. Sturm. (1851).
Comatricha alba, Preuss. in Sturm (1851).
Stemonitis Friesiana, DBary (1870); Rabh. Fung. Eur., No. 568.

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56. Comatricha pulchella. (*Bab.*)

Sporangia either elongated ovate, or cylindrical, with an obtuse apex, slightly umbilicate below, $\frac{1}{2}$-1 mm. long; stem subulate, black, $\frac{1}{6}$-$\frac{1}{2}$ mm. high, extending within the sporangium as a columella running almost to the apex; capillitium of arcuate flexuous threads, combined into a dense net, imperceptibly narrowed at the surface; mass of spores and capillitium bright ferruginous; spores pale ferruginous, delicately warted, ·0057-·0075 mm.—*Rtfki. Mon. Supp.*, 27.

var. *α* **obovata.**
var. *β* **cylindrica.**

On herbaceous plants, ferns, &c.

Stemonitis pulcherrima, B. & Curt. Grev., 373.
Stemonitis pulchella, Bab. Abst. Linn. Soc. Trans., 1839; Berk. in Ann. & Mag. N. H., p. 431 (1841), t. 12, f. 11; Cooke Hdbk., No. 1160.
Comatricha Persoonii, Rtfki. Mon., 201 (partly).

Genus **19. LAMPRODERMA.** *R.*

Sporangium globose or ellipsoid, stipitate; stem lengthened directly into the columella, scarce reaching half the height of the sporangium, either cylindrical, or swollen and clavate at the apex; capillitium fasciculate, originating from the base, usually regularly forked, rarely combined into a tangled net; wall of sporangium delicate, usually of a metallic lustre, now and then thick, with the saucer-like base of the sporangium permanent.—*Rtfki. Mon.*, 202.

57. Lamproderma physarioides. (*A. & S.*)

Sporangia globose, with a silvery metallic lustre, stipitate; stem black, opaque, subulate, expanded at the base into a small circular hypothallus, penetrating the sporangium with a short clavate swollen columella, not reaching half the height of the sporangium; tubes of the capillitium violet-brownish, originating singly from the columella, in continuation forked more and more, and combined into a net by transverse branches; at the surface of the sporangium the capillitium is rather dense; spores bright-brown, ·0125-·014 mm.—*Rtfki. Mon.*, 202.

On mossy stumps. (Figs. 55, 59, 62.)

Stemonitis physarioides, A. & S. Consp., t. 11, f. 8 (1805); B. & Br. Ann. N. Hist., No. 386; Cooke Handbk., No. 1161.

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58. Lamproderma violacea. (*Fr.*)

Sporangia lenticular, convex above, lenticular and flattened below, with the stem umbilicate beneath, $\frac{1}{2}$-$\frac{3}{4}$ mm. high, steel or violet-blue, with a metallic lustre; stem black, shining, subulate, springing from a common brownish hypothallus, prolonged within the sporangium into a cylindrical columella, truncate at the apex; threads of the capillitium variously forked directly from the base, combined into a thick net; capillitium after dispersal of the spores whitish; height of sporangium with the stem, 1-1$\frac{1}{2}$ mm.; spores bright-violet, delicately spinulose, ·0092-·01 mm.—*Rtfki. Mon.*, 204.

On moss. (Fig. 64.)

Stemonitis violacea, Fr. S. M., iii., 162 (1829); B. & Br. Ann. N. Hist., No. 387; Cooke Hdbk., No. 1162.

59. Lamproderma arcyrioides (*Somm.*)

Sporangia globose or ellipsoid, elongated, violet or bluish, with a metallic lustre, stipitate; stem either short, scarcely to be seen, or 1 mm. high, growing on a strongly developed hypothallus, black-brown, shining, penetrating within the sporangium as a columella; columella almost cylindrical, truncate at the apex (in the globose form), almost imperceptibly narrowed above and extending into the threads of the capillitium (in the elongated-ellipsoidal form); capillitium whitish-brown, the threads furcate directly from the base, arcuate, flexuous, combined into a dense intricate net; spores dull-violet, more or less spinulose, ·0125-·016 mm.—*Rtfki. Mon.*, 206.

On dead leaves, wood, &c.

Stemonitis arcyrioides, Somm. Tidsk. (1827); Berk. Ann. N. Hist., No. 114; Cooke Hdbk., No. 1163.
Stemonitis chalybea, Pers. in litt.
Stemonitis Carestiæ, Ces. & Not. (1861); Erb. Cr. Ital., 888.
Stemonitis Morthieri, Fckl. Exs., No. 1447 (1860).

var. **iridea.** *Cooke.*

Sporangia globose, steel-blue, iridescent, or with a coppery lustre, stipitate; stem twice as long as the diameter of the sporangium, erect, very dark brown, slightly expanded into the sparse hypothallus at the base, penetrating to nearly half the height of the sporangium, truncate at the apex, and there originating the capillitium; threads of the capillitium very slender, radiating, furcate, seldom connected laterally with each other, extremities free, wholly violet-brown; spores violet-brown, nearly smooth, ·011-·012 mm. diam.

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On dead leaves, &c. (Fig. 246-249.)

Stemonitis arcyrioides, Cooke Fungi Britt., ser. i., No. 523.
Lamproderma arcyrioides, Cooke Fungi Britt., ser. ii., No. 523.

On comparison of this latter form with the description of *L. arcyrioides*, as given by Rostafinski, and the specimens published by Fuckel (No. 1447), and Rabenhorst (F. Eur. 797), we are convinced that the present is very distinct, the capillitium is much more slender, entirely different in its character, and the spores are much smaller and nearly smooth. For the present we have not proposed it as a distinct species.

Family 7. ENERTHENEMACEÆ.

Sporangium stipitate; stem prolonged within the sporangium as a columella through its length and expanding at the apex in a discoid membrane; capillitium only originating from the stout discoid expanded apex of the columella.—*Rtfki. Mon.*, 208.

Genus **20.** **ENERTHENEMA.** *Bowm.*

Threads of the capillitium rarely forked, not combined into a net, with the ends free.—*Rtfki. Mon.*, 209.

60. **Enerthenema papillata.** (*Pers.*)

Sporangia globose, naked, dull-brown, lustrous above, crowned with a very small blackish horn, stipitate; stem black, opaque, conical, at the passage into the columella distinctly narrowed; columella conical, widened at the apex of the sporangium into a vesicular boss usually horn-like, black, shining, standing on the surface of the sporangium; capillitium originating from the margin and bottom of this boss, tubes equal through their whole length, not numerously forked, with the ends free; spores bright-violet, smooth, ·0086-·01 mm. diam.—*Rtfki. Mon.*, 209.

On rotten wood. (Figs. 45, 48, 49, 52, 57.)

Arcyria atra, Schum. Saell., 1487 (1803).
Enerthenema elegans, Bowm. Linn. Trans. (1828); xvi., p. 151, t. 16; Rtfki. Mon., p. 209.
Stemonitis mammosa, Fr. S. M., iii., 161 (1829).
Stemonitis papillata, Pers. disp. fung., t. i., f. 4; Berk. Eng. Fl. v., p. 317.

61. **Enerthenema Berkeleyana.** *R.*

Very similar in habit to the preceding; it differs in the spores being gathered together from 4 to 12 in a lump, the single spores having the form of a sector of a circle, with a radius of ·013 mm.; the convex portion distinctly warted, the rest smooth; threads of

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capillitium proceeding from the apical horn, as in the preceding species, but less numerous.—*Rtfki. Mon. Supp.*, 29.

On wood, &c.

Enerthenema elegans, Berk. & Br. Ann. N. H., No. 388, t. ii., f. 7; Cooke Hdbk., No. 1164 (not Bowman).

Family 8. AMAUROCHETACEÆ.

Æthalium consisting of numerous, elongated, entirely naked sporangia, arranged close together in several layers; along the sporangia of the lower and middle stratum run the columellæ; the columellæ of the single sporangia grown together amongst themselves, and forming tree-like branches, grown to the base of the æthalium in several places; sporangia of the middle and upper stratum possessed of a capillitium, with the threads combined into a net, common to all the sporangia; the branchings of the net dense, at the points of union expanded triangularly.—*Rtfki. Mon.*, 210.

Genus **21.** **AMAUROCHÆTE.** *R.*

Æthalium very variable in form and size, covered with a delicate papery bark; columella and capillitium very variable, evident according to the height of the æthalium.—*Rtfki. Mon.*, 210.

62. **Amaurochæte atra.** (*A. & S.*)

Æthalium variable in form and size, covered with a delicate papery bark; columella and capillitium variable; spores violet, spinulose, ·014-·015 mm.

On wood and bark of felled pines. (Fig. 67.)

Lycoperdon fuliginosum, Sow., t. 257 (1803).
Lycogala atrum, A. & S. Con., t. 3, f. 3 (1805).
Dermodium inquinans, Link. Diss., 25 (1808).
Strongylium atrum, Link.
Strongylium atrum, Swartz Vet. Handl., 110 (1815).
Strongylium majus, Fr. Gast., 9 (1817).
Lachnobolus cribrosus, Fr. Orb. Veg., 148 (1825).
Reticularia atra, Fr. S. M., iii., p. 86 (1829); Eng. Fl., v., p. 308; Cooke Hdbk., No. 1099.

Family 9. BREFELDIACEÆ.

Æthalium consisting of numerous, elongated, entirely naked, close-standing sporangia, arranged in several strata; along the sporangia of the lower and middle strata run the columellæ. Columellæ of the single sporangia coalescing, form tree-like branches, grown to the base of the æthalium in many places; sporangia of

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the middle and upper stratum with a capillitium of very thin equal threads radiating from the centre, united to each other and to the boundary of the sporangia.—*Rtfki. Mon.*, 212.

Genus **22.** **BREFELDIA.** *R.*

Æthalium naked, with the surface warted; threads of the capillitium combined at the boundary of the sporangia into polycellular vesicles, of a very complex structure.—*Rtfki. Mon.*, 212.

63. **Brefeldia maxima.** (*Fr.*)

Æthalium naked, with the surface warted, purple-black, now and then olive by reflection; seated on a strongly-developed, silvery-lustrous hypothallus; spores violet, spinulose.—*Rtfki. Mon.*, 213.

On trunks of felled trees. (Figs. 60, 65, 66, 69, 70.)

Lycoperdon epidendrum, Sow., 400, f. 2, 3 (1809).
Dermodium inquinans, Fr. Gast., 9 (1817).
Reticularia maxima, Fr. S. M., iii., 85 (1829); Eng. Fl. v., 308; Cooke Hdbk., No. 1097; Fungi Britt., ii., 518.
Lycoperdon echiniformis, Sow., t. 400, f. 1.
Licea perreptans, Berk. Gard. Chron. (1848), 451; Ann. Nat. Hist., No. 592; Cooke Hdbk., No. 1196.

Family 10. ECHINOSTELIACEÆ.

Sporangia stipitate, but without columella; capillitium originating at its base from the stem, combined into a loose net.—*Rtfki. Mon.*, 215.

Genus **23.** **ECHINOSTELIUM.** *De Bary.*

Branches of the capillitium arcuate, growing to the top of the sporangium, provided with numerous lateral, acutely-terminating slack arms.—*Rtfki. Mon.*, 215. (Fig. 68.)

SUB-DIVISION II. **LAMPROSPORÆ.**

Spores diversely coloured, never violet.

Sect. A. *ATRICHÆ.*

Sporangia without a capillitium.

ORDER IV. ANEMEÆ.

Sporangium or æthalium without capillitium or lime; columella not evident, wall of sporangium without net-like thickenings, now and then symmetrically perforated.—*Rtfki. Mon.*, 217.

Family II. DICTYOSTELIACEÆ.

Same as the genus.

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Genus **24.** **DICTYOSTELIUM.** *Bref.*

Stem many celled, sporangium naked.—*Rtfki. Mon.*, 217.

Family 12. LICEACEÆ.

Simple sporangia, plasmodiocarp or æthalium; wall of sporangium not symmetrically perforated.—*Rtfki. Mon.*, 218.

Genus **25.** **LICEA.** *Schrad.*

Plasmodiocarp with simple walls, usually covered with a stout, brownish, opaque, subsiding bark.—*Rtfki.*, 218.

Genus **26.** **TUBULINA.** *Pers.*

Sporangia cylindrical, standing in clusters upon a hypothallus, almost flattened, or evidently stipitate; wall of sporangium simple. —*Rtfki.*, 219.

64. **Tubulina cylindrica.** *Bull.*

Sporangia cylindrical, rounded at the apex, gregarious, mostly crowded, standing at first on a plane, then convex hypothallus; mass of spores rusty-chestnut, or pale chestnut; spores delicately warted, ·095-·0067 mm. diam.; walls of the sporangium when quite mature beautifully iridescent.—*Rtfki. Mon.*, 220.

On rotten wood.

Tubulifera ceratum, Fl. Dan., t. 659, f. 2 (1777).
Tubulifera arachnoidea, Jacq. Misc., t.-15 (1778).
Mucor tubulosus, Retz.
Stemonitis ferruginosa, Batsch., f. 175 (1786).
Sphærocarpus cylindricus, Bull., t. 470, f. 3 (1791).
Sphærocarpus fragiformis, Bull., t. 384? (1791).
Tubifera ferruginosa, Gmel. Sys., 1472 (1791).
Tubifera cylindrica, Gmel. Sys., 1472 (1791).
Tubifera fragiformis, Gmel. Sys., 1472 (1791).
Trichia fragiformis, With. Arr., iii., 480 (1792).
Tubulifera coccinea, Trent., p. 243 (1797).
Licea tubulina, Schrad. N. G., 16 (1797).
Licea clavata, Schrad. N. G., 18 (1797).
Tubulina fragiformis, Pers. Disp., p. 11 (1797); Pers. Syn. t..4, f. 3, 4.
Tubulina fallax, Pers. Obs., ii., 28 (1799).
Tubulina fragiformis, *α. papillata*, *β. clavata*, *γ. conica*, *δ. coccinea*, *ε operculata*; Pers. Obs., ii., 29.
Reticularia multicapsula. Sow., t. 179 (1799).
Tubulina cylindrica, DC. Fl. Fr., 674 (1805).
Tubulina fragifera, Poir. Ency., viii., No. 3 (1808).
Licea fragiformis, Nees, f. 102 (1816); Eng. Fl., v., p. 321; Cooke Hdbk., 1194; Fung. Britt., ii., 528.
Dermodium fallax, Nees, f. 103 (1816).

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Licea cylindrica, Fr. S. M., iii., 195 (1829); Eng. Fl., v. 391; Cooke Hdbk., No. 1193.
Licea iricolor, Zoll. in Flora (1847) p. 300.
Tubulina conglobata, Preuss. Linnæa, 140 (1851).

Genus **27.** **LINDBLADIA.** *Fr.*

Æthalium naked, composed of numerous irregularly polygonal minute sporangia, with the walls grown together; surface to the extremities of the sporangia warted.—*Rtfki. Mon.*, 223.

65. **Lindbladia effusa.** (*Ehb.*)

Æthalium naked, seated on a common, strongly-developed hypothallus; cortex when prematurely dessicated black, thick, brown, lustrous, with the surface rough; mass of spores brown-ochre or umber; spores bright-coloured, smooth, ·0058-·0072 mm. diam.—*Rtfki. Mon.*, 223.

On the ground, &c.

Licea effusa, Ehr. Sylv., p. 26, f. 1 (1818).
Æthalium melænum, Chev. Byss., iii. (1837).
Lindbladia tubulina, Fr. S. V. S., 449 (1849).
Æthalium atrum, Preuss. Linnea, 141 (1851).
Reticularia maxima, Corda. Ic., vi., 35 (1852).
Reticularia granulosa, Œrst. MSS.
Lindbladia effusa, Rostfki. Mon., p. 123 (1875); B. & Br. Ann. N. Hist., No. 1605; Grevillea, v., p. 13.

Family 13. CLATHROPTYCHIACEÆ.

Æthalium comprising numerous sporangia, either cylindrical, standing in a compact stratum, or else globose with several in a stratum, the walls regularly perforated.—*Rtfki. Mon.*, 224.

Genus **28.** **CLATHROPTYCHIUM.** *R.*

Sporangia not stipitate, closely seated on a common substratum; walls with the external apex alone permanent, campanulate, united by a few simple threads which cross over from the apex to the base.—*Rtfki. Mon.*, 225.

66. **Clathroptychium rugulosum.** (*Wall.*)

Hypothallus strongly developed; sporangia bell-shaped at the apex, attached to the base by six simple, permanent, triangular threads; colour of the æthalium variable, red-brown or ochrey-brown, now and then olive by reflection; mass of spores ochre or ochrey-brown; spores delicately warted, ·0083-·01 mm. diam.—*Rtfki. Mon.*, 225.

On dead twigs, &c. (Figs. 25, 28, 29, 30.)

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Fuligo plumbea, Fl. Dan. 1976, f. 1 (1803).
Reticularia plumbea, Fr. S. M., iii., 88 (1829).
Licea rugulosa, Wallr. Fl. Germ., 2107 (1833).
Licea applanata, Berk. Hook. Journ. (1845) 66; B. & Br. Ann. Nat. Hist., No. 313; Cooke Hdbk., No. 1195.
Lycogala lenticulare, DK. & M. Fl. Alg., 401 (1846).
Reticularia lenticularis, Mort. Hb.
Dictydiæthalium applanatum, Rstfki. in Fckl. Symb., 2 Nach. 69 (1873).

Genus **29.** **ENTERIDIUM.** *Ehr.*

Æthalium covered with a delicate membranaceous cortex; the closed single sporangia combined together, with large symmetrical openings in all the walls; walls of sporangia after the dispersal of the spores formed into a net-like, three-winged skeleton.—*Rtfki. Mon.*, 226.

67. **Enteridium olivaceum.** (*Ehr.*)

Æthalium either quite plane or hemispherical, covered with a delicate papery bark, pellucid, but with the spores olive; glassy walls of sporangium pellucid brown-yellow; spores in clusters of from 10 to 20; single spores truncate, only the convex surface delicately warted.—*Rtfki. Mon.*, 227.

On fallen trunks. (Fig. 5.)

Lycoperdon undulinum, Schum. Saell., 1404 (1803).
Enteridium olivaceum, Ehr., f. 1, 5 A. E. (1818); Rstfki. Mon., p. 227.
Reticularia versicolor, Fr. Obs., ii., 147 (1818).
Licogala olivacea, Link. Hb.
Reticularia ungulina, Fr. in Fl. Dan., t. 1977, f. 2 (1823).
Reticularia olivacea, Fr. Sys. Myc., iii., 89 (1829).
Enteridium atrum, Preuss. Linnea., 142 (1851).
Reticularia applanata, B. & Br. Ann. Nat. Hist. (1866), t. ii., f. 3; Cooke Hdbk., No. 1098.
Licea olivacea, Fckl. Sym., 338 (1869).
Licea glomulifera, DBary & Rtfk. in Alex. (1872).
Licæthalium olivaceum, Rtfki. Vers., p. 4 (1873).
Lindbladia versicolor, Rtfki. in Fckl., 68 (1873).

ORDER V. HETERODERMEÆ.

Sporangia without capillitium, columella, or lime; wall of sporangium delicate, when mature at least partly cracked, exposing the net-like flat thickenings of the inner side of wall; spores and thickenings of the inner wall in one and the same sporangium usually of an uniform colour.—*Rtfki. Mon.*, 229.

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Family 14. CRIBRARIACEÆ.

Sporangia stipitate, standing singly; usually only the upper portion of the wall cracking away, leaving behind the net-like inner thickenings.—*Rtfki. Mon.*, 229.

Genus **30.** **DICTYDIUM.** *Schrad.*

Thickenings of the inner wall of the sporangia of uniform width compounded by very thin thready fibres into a net with more or less rectangular meshes.—*Rtfki. Mon.*, 229.

68. **Dictydium cernuum.** (*Pers.*)

Hypothallus, stem, and mass of spores purple-brown; stem two or three times longer than the sporangium, erect, bent at the apex; sporangium globose, ½ mm. diam., nodding; net-like thickenings after the dispersal of the spores deficient at the apex; spores ——. —*Rtfki. Mon.*, 229.

On rotten wood, pine stumps, &c. (Figs. 17-19, 22.)

Mucor cancellatus, Batsch., f. 232 (1789).
Stemonitis cancellata, Gmel. Sys., 1468 (1791).
Sphærocarpus trichioides, Bull., p. 124 (1791).
Cribraria cernua, Pers. Obs., i., 91 (1796).
Dictydium umbilicatum, Schrad., t. 4, f. 1 (1797); Fr. S. M., iii., 165; Berk. Eng. Fl., v. 318; Cooke Hdbk., 1165, fig. 134.
Dictydium ambiguum, Schrad., t. 4, f. 2 (1797).
Trichia cernua, Poir. Ency., viii., No. 25 (1808).
Dictydium cernuum, Nees, f. 117 (1816); Rtfki. Mon., p. 230 (1875).
Dictydium trichioides, Chev. Fl. Par., 327 (1827); Corda. Ic. v., f. 36.

Genus **31.** **HETERODICTYON.** *R.*

Thickenings of the inner wall of sporangium compounded below of parallel continuous wide ribs combined by thin threads into a net with rectangular meshes, passing in the upper half of the sporangium into polygonal knots, with irregular radiating thin branches.—*Rtfki. Mon.*, 231. (Fig. 16)

Genus **32.** **CRIBRARIA.** *Pers.*

Thickenings of the inner side wall of sporangia compounded into a net-work of combined threads, often flattened and developed into knots at the points of junction; meshes of the net irregularly polygonal; lower part of the sporangium often basket-shaped.—*Rtfki. Mon.*, 231.

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Sub-Genus 1. *Schraderella.*

Thickenings combined into a net, equally broad throughout their entire length, knots wanting; receptacle usually strongly developed.

69. Cribraria rufa. (*Roth.*)

Sporangia turbinate, or pyriform, rufous, stipitate, with a purple-brown erect stem; receptacle usually strongly developed, funnel-shaped, with a regularly eroded margin; thick threads originating from the ribs of the receptacle, wide, combined into a loose net; spores smooth, ·005-·0065 mm.—*Rtfki. Mon.*, 232.

On wood, &c. (Fig. 15.)

Stemonitis rufa, Roth. Fl. Germ., 548 (1788).
Cribraria rufescens, Pers. Desp., t. i., f. 5 (1797).
Cribraria fulva, Schrad., t. i., f. 1 (1797).
Cribraria intermedia, Schrad., t. i., f. 2 (1797); Berk. & Br. Ann. N. Hist., No. 1601.
Trichia rufescens, Poir. Ency., viii., No. 31 (1808).
Cribraria rufa, Rtfki. Mon., p. 232 (1875).

Sub-Genus 2. *Eucribraria.*

Thickenings combined into a net widened at the points of junction into knots; receptacle now and then entirely undeveloped.

70. Cribraria aurantiaca. *Schrad.*

Sporangia globose, more or less nodding, rufous or nut-brown rufous, stipitate, stem bright nut-brown; receptacle strongly developed, hemispherical, occupying more than one-third of the lower part of the sporangium, with regular short sharp pointed teeth above, from which immediately proceed the net-work; the knots unusually very strongly developed, branching out and almost all running into each other, or at least coming in contact with their ends, and forming one net, strongly serrated, and combined with each other by thin threadlike fibres; mass of spores orange or brown-yellow; spores yellowish, smooth, ·005-·0065 mm. diam.—*Rtfki. Mon.*, 233.

On rotten wood, especially fir. (Fig. 21.)

Cribraria aurantiaca, Schrad., t. i., f. 3-4 (1797); Fr. S. M., iii. 174; Cooke Hdbk., 1169; B. & Br. Ann. N. H. (1865), No. 1037.
Cribraria vulgaris β aurantiaca, Pers. Syn., 194 (1801).
Trichia rufescens β aurantiaca, Poir. Ency. viii., 31.
Cribraria aurantiaca γ sulphurea, Wallr. Fl. Germ. (1833).
Cribraria intermedia, Berk. Engl. Fl. v., p. 318 (1836); Cooke Hdbk., No. 1166.
Cribraria variabilis, Ficinus Dresd. Fl., 269 (1838).

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71. Cribraria intricata. *Schrad.*

Sporangia globose, erect, nut-brown, reaching to 1 mm. diam.; mass of spores dull-yellow; stem subulate, slightly thickened below, purple-brown; receptacle hemispherical, with the margin regularly serrated; knots of the net thickened, strongly developed, polygonal, with the angles very thick, united to each other by two, three, or four parallel thin threadlike fibres; spores yellow, ·005-·0065 mm. diam.—*Rtfki. Mon.*, 237.

On fir stumps. (Fig. 27).

Cribraria intricata, Schrad. Nov. Gen., t. iii., fig. 1; Rtfki. Mon., p. 237 (1875); Cooke Hdbk., No. 1167.

72. Cribraria macrocarpa. *Schrad.*

Sporangia pyriform, or obovate, erect, yellowish-brown, mass of spores dull-yellow; stem stout, short, slightly crooked, dark-brown; receptacle one-third of the lower part of the sporangium usually funnel-shaped, often strongly perforated, with the margin mostly irregularly lacerated, with the teeth reaching to the elongated knots; network of irregular knots, many times longer than broad, more than once branched with the simple or forked arms, with the sides united by thin threadlike fibres; spores yellow, ·005-·0065 mm. diam.—*Rtfki. Mon.*, 238.

Trichia macrocarpa, Poir. Ency., viii., No. 30.
Cribraria macrocarpa, Schrad., t. 2, f. 3, 4.; Rtfki. Mon., p. 238 (1875); B. & Br. Ann. Nat. Hist., No. 1600.

73. Cribraria argillacea. *Pers.*

Sporangia crowded together, with a short evanescent stem, mass of spores clay-colour; walls of sporangium permanent, when quite mature beautifully shining, inner wall provided with irregular net-like thickenings, the threads wide at the base, higher up always knotted, receptacle quite destitute of distinct markings; spores bright-coloured, ·005-·0065 mm. diam.—*Rtfki. Mon.*, 238.

On stumps of Scotch fir.

Stemonitis sphærocarpa, Schr. Bot. Mag., xii., 20 (1790).
Stemonitis argillacea, Pers. in Gmel., 1409 (1796).
Cribraria argillacea, Pers. Obs., i., 90 (1796); B. & Br. Ann. N. Hist. (1865), No. 1036; Cooke Hdbk., 1168; Fungi Britt., ii., 526.
Cribraria micropus, Schrad., t. ii., f. 1, 2 (1797).
Trichia argillacea, Poir. Ency., viii., No. 32 (1808).

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Order VI. RETICULARIÆ.

Spores, capillitium, and columella uniformly bright-coloured, without lime; capillitium of very thin-sided tubes, without thickenings, combined into a thickly intricate but loose-hanging net.—*Rtfki. Mon.*, 240.

Family 15. Reticulariaceæ.

Æthalium composed of numerous, elongated, entirely naked, distinctly stratified sporangia, arranged in a few strata; sporangia of the lower and middle stratum with columella lengthwise; columellæ of the single sporangia grown together, forming numerous tree-like branches, in many places grown to the bottom of the æthalium; sporangia of the middle and upper stratum with capillitium.—*Rtfki. Mon.*, 240.

Genus 33. **RETICULARIA.** *Bull.*

Æthalium covered with a common stout, but tender bark.—*Rtfki.*, 240.

74. Reticularia lycoperdon. *Bull.*

Spores, columella, and capillitium alike umber or rusty chestnut-coloured; cortex either of the same colour, opaque and smooth, or with a silvery lustre, or covered with yellowish, uneven warts; spores ·0083 mm., half the surface nearly smooth, the other half reticulated.—*Rtfki. Mon.*, p. 240.

On stumps, &c. (Figs. 3, 4, 6, 13.)

Lycogala griseum major, Mich., t. 95, f. 1 (1729).
Lycoperdon fuscum, Huds. Fl. Aug., 645 (1778).
Mucor lycogalus, Bott., t. 133, f. 2 (1789).
Reticularia lycoperdon, Bull., t. 446, f. 4, t. 476, f. 1-3 (1791).
Lycogala argentea, Pers. Disp., 7 (1797).
Lycogala turbinatum, Pers. Syn., 157 (1801).
Strongylium fuliginoides, Ditm., t. ii., f. 1 (1809).
Fuligo lycoperdon, Schum. Saell., 1409 (1803).
Reticularia argentea, Poir. Ency., vi., 20 (1806).
Reticularia umbrina, Fr. S. M., iii., 87 (1829); Corda. Ic., vi., f. 36; Eng. Fl., v., 308; Cooke Hdbk., No. 1100.

Order VII. CALONEMEÆ.

Walls of sporangia, spores, and capillitium usually uniformly coloured in the same sporangium. Colour variable, from yellow to brownish, or chestnut, more rarely olive-green, or greyish-white; capillitium usually strongly developed; threads simple or combined into a net, either entirely free, or grown to certain places of the wall of the sporangium; walls of the threads very rarely smooth, usually provided externally with protruding thickenings, either

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spiral-shaped or under the form of numerous spines, warts, or transverse rings; without fixed columella; exceptionally containing lime, exclusively in the walls of the sporangia; now and then æthalia covered with a stout double cortex of coloured cells.—*Rtfki. Mon.*, 242.

Family 16. TRICHIACEÆ.

Without lime, sporangia sessile or stipitate, usually dehiscing irregularly. Wall of the sporangium single or double, the inner one surrounds on all sides if protruding, and in this manner separates the mass of spores and capillitium from the tube of the stem; capillitium either of simple threads with both ends attenuated, or combined into a net, with thin-sided walls, provided with serpentine thickenings; wall of sporangium, capillitium, and spores usually of the same colour in the same sporangium, mostly olive or brownish.—*Rtfki. Mon.*, 243.

Genus **34.** **TRICHIA.** *Hall.*

Tubes of the capillitium simple, free, with both extremities pointed, only exceptionally now and then forked.—*Rtfki. Mon.*, 243.

75. **Trichia fallax.** *Pers.*

Sporangia turbinate, shining, stipitate, of different shades of yellow; stem darker, filled with polygonal masses of organized matter, changing at the end directly into more and more regular roundish masses, and at last quite normal spores. Elaters fusiform, ·004-·0058 mm., thick in the centre, narrowed uniformly to the ends, but not considerably, at least terminating in a point from four to six times in length of the diameter of the elaters, smooth; spiral of three spires, but little prominent, divided from each other by narrower, or equally wide depressions. In some individuals the greater part of the elaters branched, a few, even in the typical form, with the terminal arm; spores ·01-·0125 mm., delicately warted.—*Rtfki. Mon.*, 243.

On rotten wood. (Figs. 211, 221, 222, 233-236.)

a. **minor.** Sporangia usually turbinate, rarely pyriform, or clavate, dark-ochre or ochre-brown, 1½ mm. high.

β. **genuina.** Sporangia usually turbinate, rarely pyriform or clavate, ochre-yellow, now and then olive-green, 2-3½ mm. high.

γ. **cerina.** Sporangia pyriform, usually olive-yellow, 4-5 mm. high.

I. **simplex.** Elaters fusiform, simple, with only two ends.

II. **furcata.** Elaters usually with the ends branched, sometimes with branches in the centre; ends from three to ten.

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Mucor capitulis pyriformis, Fl. Dan., t. 647, f. 2 (1770).
Mucor miniatus, Jacq. Misc., t. 299 (1778).
Stemonitis flavescens, Schrank., p. 19 (1792).
Lycoperdon aggregatum, Liljeb. Fl. Scan., 460 (1792).
Lycoperdon pusillum, Hedw. Abh., t. iii., f. 2 (1793).
Trichia fallax, Pers. Obs., iii., t. 4, 5 (1797); Nees, f. 113; Corda Ic., iv., 97; Eng. Fl., v., 319; Cooke Hdbk., 1182.
Physarum pyriforme, Schum. Saell., 1448 (1803).
Trichia virescens, Schum. Saell., 1459 (1803).
Trichia cerina, Ditm., t. 25 (1817); Curr. Micr. Journ., v., p. 127; Cooke Hdbk., No. 1184.
Trichia fulva, Purt. Mid. Fl., 1534 (1817).
Trichia clavata, Wigand, No. 3 (1863).
Trichia furcata, Wigand, No. 4 (1863).
Arcyria elongata, Bong. Herb.

76. Trichia fragilis. *Sow.*

Sporangia usually pyriform, more rarely turbinate, either standing singly or with the stems agglutinated together lengthwise into a bundle, crowned with numerous sporangia. Colour variable, mostly dull red-brown, or blackish-brown, more rarely yellow or coffee-brown, opaque; mass of spores and elaters separate from the pit of the stem, a separate membrane surrounding it on all sides, dull ochrey-yellow, cinnamon, or rusty-yellow, more rarely clear yellow; stem very much wrinkled, colour of the wall of the sporangium, either stiff and erect, or nodding and prostrate; elaters fusiform, at the centre from ·0042 mm. thick, not conspicuously narrowed to the ends, terminating in a smooth point twice the length of the diameter of the elater; spirals three, turning to the right, very prominent, with intervening, even, or a little uneven depressions; spores ·0115-·0133 mm., with a stout membrane delicately warted.—*Rtfki. Mon.*, 246.

α. **genuina.**

Sporangia pyriform, red or dark-brown, sometimes black, opaque. Mass of spores and elaters cinnamon or rusty-brown, sometimes dull dark-ochre. Stem rigid, erect.

I. *Simplex.* Stem simple.
II. *Botrytis.* Stems connate, fasciculate, crowned with numerous sporangia.

β. **Lorinseriana.**

Sporangia pyriform, bright red-brown, a little shining on the surface. Mass of spores and elaters dull ochrey-yellow. Stem usually not rigid, bending in an arcuate manner or prostrate.

I. *Simplex.* Stem simple.
II. *Botrytis.* Stems connate, fasciculate, crowned with numerous sporangia.

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γ. **serotina.**

Sporangia clavate or pyriform, carmine-brown, or bright-chestnut. Mass of spores and elaters clean yellow, or ochrey-yellow. Stem rigid, erect.

I. *Simplex.* Stem simple.

II. *Botrytis.* Stems connate, fasciculate, crowned with numerous sporangia.

(Figs. 203, 204, 225, 226.)

Lycoperdon bombacinum, Batsch. El., p. 153 (1783).
Stemonitis botrytis, Pers., in Gmel. Sys., 1468 (1791).
Trichia botrytis, Pers. Disp., p. 9 (1797); Ic. Pict., t. 12, f. 1, 2.
Trichia botrytis, *β minor*, Pers. Disp., 54 (1797).
Trichia serotina, Schrad. Journ., t. 3, f. 1 (1799); Eng. Fl., v., p. 310; Cooke Hdbk, No. 1181.
Sphærocarpus fragilis, Sow., t. 279 (1803).
Trichia notata, Fl. Dan., 1680 (1823).
Trichia badia, Fr. Stirp. Femsj., 83 (1825).
Trichia pyriformis, Fr. S. M., iii., 184 (1829); Curr. Micr. Journ., iii., t. 2, f. 9, 10; Cooke Hdbk., No. 1178.
Trichia Lorinseriana, Corda Ic., i., f. 228 D (1837); Curr. Micr. Journ., v., p. 129; Cooke Hdbk., No. 1180.
Trichia pyriformis, *β serotina*, Rtfki. in Fckl. Symb. 2 N. 75 (1873).
Craterium floriforme, Schw. Am., No. 2307.
Alwisia bombarda, B. & Br., Ceylon Fungi, No. 784, t. ii., f. 6 (1873).

77. Trichia varia. *Pers.*

Sporangia diversely developed, either with a stem, or sessile; elaters cylindrical, very thin walled, ·0042 mm. diam., with the ends usually not distinctly swollen, consequently running through to the end, usually a little bent on one side, two to three times the diameter of the elater in length; spirals two, turning to the right, separated by intervening spaces three to four times as broad, on the convex side the bent elaters very much notched prominently; spores ·01-·014 mm., delicately warted.—*Rtfki. Mon.*, p. 251.

On stumps. (Figs. 191, 202, 208, 212, 218, 237.)

r. **nigripes.**

Sporangia variable in shape, yellow-ochre, dirty-ochre, or olive, with a short or long distinct blackish stem.

v. **sessilis.**

Sporangia turbinate, sometimes roundish, wide at the base standing on a substratum, stem discoid, flattened, short, scarcely evident.

v. **genuina.**

Sporangia completely sessile, globose, irregularly flattened, often with kidney-shaped sporangia mixed together.

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a. **Trichia varia, v. nigripes.**

Mucilago minima, Mich., t. 96, f. 4 (1729).
Embolus albissimus, Hall Herb., p. 8 (1742).
Embolus, Hall, No. 2138 (1768).
Mucor pyriformis, Scop. Fl. Carn., 492 (1772).
Mucor pomiformis, Leers Fl. Herb., 1136 (1775).
Mucor lacteus, Leers Fl. Herb., 1132 (1775).
Stemonitis pyriformis, Willd. Fl. Ber., 409 (1787).
Embolus lacteus, Hoff. Veg. Cr., t. ii., f. 3 (1790).
Sphærocarpus chrysospermus, Bull., t. 417, f. 4 (?).
Trichia olivacea, Pers. Obs., i., 62 (1796).
Arcyria olivacea, Ransch (1797).
Trichia cylindrica, Pers. Obs., ii., 33 (1799).
Trichia cordata, Pers. Obs., ii., 33 (1799).
Trichia nigripes, Pers. Syn., 178 (1801).
a pyriformis, *β cordata*, *γ cylindrica*, *δ vulgaris*; Fl. Dan., t. 1313, f. 2; Curr. Micr. Journ., v., p. 128; Cooke Hdbk., No. 1185.
Trichia cralerioides, Corda Ic., ii., f. 85 (1838).

γ **Trichia varia, v. genuina.**

Lycogala luteum, Mich., t. 95, f. 4 (1729).
Mucor quintus, Schff 296 (1770).
Mucor granulatus, Schff., No. 286 (1770).
Lycoperdon vesiculosum, Batsch, 283 (1786).
Sphærocarpus chrysospermus, Bull., t. 417, f. 4 (?)
Stemonitis varia, Pers. in Gmel, Sys, 1470 (1791).
Stemonitis vesiculosa, Gmel. Sys., 1470 (1791).
Trichia olivacea, Pers. Obs., l., 62 (1796).
Trichia varia, Pers. Disp., p. 10 (1797); Eng. Fl., v., 320; Cooke Hdbk., No. 1188.
Lycoperdon luridum, Hedw. Obs., t. xi A. (1802).
Trichia favoginea, Schum. Saell., 1455 (1803).
Trichia applanata, Hedw., in DC. Organ, t. 60, f. 1 (1827).

78. Trichia chrysosperma. *Bull.*

Sporangia in the typical form gathered in clusters, sessile; elaters cylindrical, usually ·0083 mm. diam., exceptionally only ·005 mm., diam. terminating in a smooth end, which is straight or slightly bent, scarcely as long as the diameter of the elaters; spirals four to five, thin but little prominent; between every two neighbouring spirals running parallel to the walls of the elater are thinner ridges uniting them like bridges; spores globose, provided with a thickened network, ·0017-·0026 mm. high, with polygonal meshes; diameter of spores, ·01-·0108 mm. without, or ·0125-·015 mm. including the thickness of the projecting network.—*Rtfki. Mon.*, 255.

On stumps. (Figs. 209, 213, 240.)

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Lycoperdon gregarium, Retz. Obs. i., 33 (1769).
Lycoperdon favogineum, Batsch., f. 173 (1786).
Stemonitis pyriformis, Roth. Fl. Germ., i., 548 (1788).
Sphærocarpus chrysospermus, Bull. t. 417, f. 4 (1791).
Stemonitis favoginea, Gmel. Sys., 1470 (1791).
Trichia nitens, Pers. Obs., i., 62 (1796).
Trichia favoginea, Pers. Disp., 10 (1797).
Trichia chrysosperma, DC. Fl. Fr., 673 (1805); Eng. Fl. v. 320; Cooke Hdbk., No. 1187; Fungi. Britt., ii., 524, 527.
Trichia turbinata, Purt. Brit., ii., 1115 (1817).
Clathroides fluvescens, Hall, t. 1, f. 7 (1742).
Trichia, Hall, 2168, t. 48, f. 7 (1768).
Lycoperdon aggregatum, Retz. Fl. Scan., 1627 (1769).
Lycoperdon epiphyllum, Light. Fl. Sc., 1069 (1777).
Clathrus turbinatus, Huds. Fl. Ang., 632 (1778); Bolt., t. 94, f. 3.
Trichia pyriformis, Vill. Fl. Dauph., 1060 (1789).
Stemonitis pyriformis, Pers., in Gmel. Sys., 1468 (1791).
Trichia turbinata, With. Arr., iv., 480 (1792); Sow., t. 85; Eng. Fl., v., 320; Cooke Hdbk., 1186.
Trichia pyriformis, Pers. Disp. 10 (1797).
Trichia olivacea, Pers. Obs., i., 62 (1796), in part.
Trichia ovata, Pers. Obs., ii., 35 (1796); Schum. Saell., 1454; Fl. Dan., t. 1313, f. 1.
Trichia vulgaris, Pers. Obs.. ii., 32 (1799).
Physarum contextum, Spr. Sys., ix., 20 (1817).

Genus **35.** **PROTOTRICHIA.** *R.*

Tubes of capillitium, with one end grown to the lower part of the sporangium, the other running out into a free pencil of smooth spines.—*Rtfki. Mon. Supp.*, 38.

79. **Prototrichia flagellifer.** *B. & Br.*

Sporangia sessile, globose, reflecting metallic tints, grown to the substratum by a very narrow base. Mass of spores and capillitium flesh-red. Tubes of capillitium very broad at the base, imperceptibly narrowed to the apex, expanding at the extremity into several nearly smooth ends (spines), with four spires indistinctly marked, or very narrow, preceding oftentimes broad depressions; spores smooth, ·01-·012 mm.—*Rtfki. Mon. Supp.*, 38.

On spruce fir.

Trichia flagellifer, B. & Br. Ann. N. Hist. (1866), No. 1143 t. 2, f. 4; Cooke Handbk., No. 1190.
Dermatricha flagellifer. Cooke MSS.

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TRICHIA.

A. Bigyræ.

Elaters cylindrical, with two spirals, separated by a space 3 or 4 times their diameter. — VARIA.

B. Polygyræ.

Elaters cylindrical or fusiform, with more than two spirals.

I. Elaters fusiform, sporangium stipitate.

† Sporangium, together with the stem, forming only a common hollow. . — FALLAX.

†† Hollow of the sporangium divided from the hollow of the stem by a proper membrane.

Elaters ·00415 mm. broad, with three spirals. . . . . — FRAGILIS.

Elaters ·005 mm. broad, with four spirals, which are widened and flattened . . . . . — *lateritia.*

II. Elaters cylindrical.

† Sporangium stipitate . . . — *Decaisneana.*

†† Sporangium sessile.

* Spores smooth or warted.

Elaters ·0042 mm. broad, with from four spirals covered with spines . . . . . — *scabra.*

Elaters ·0033 mm. broad, with from four spirals, smooth, terminating in a smooth end, twice as long as the diameter of the elater. . — *inconspicua.*

Elaters ·0025-·0033 mm. broad, with inconspicuous swellings near the end, terminating in a thin, smooth, sharp-pointed spine. Spirals from 2 to 4, scarcely to be distinguished. . . . . — *contorta.*

** Spores provided with a thickened band.

! Neighbouring spirals united into a band, by thin veins running parallel to the walls of the elater . . . — CHRYSOSPERMA.

!! Spirals not thus united.

Spirals from 3 to 5. Elaters ·00415-·005 mm. broad. . — *affinis.*

Spiral from 3 to 4, covered with numerous spines. Elaters ·00415 mm. broad. — *Jackii.*

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Genus **36.** **HEMIARCYRIA.** *R.*

Tubes of the capillitium combined into a net, which is either free, or by means of its lower arms sunk in the midst of the contents of the tube of the stem.—*Rtfki. Mon.*, 261.

80. **Hemiarcyria rubiformis.** (*Pers.*)

Sporangia usually fasciculate, collected in a short coalescing stem, often of a beautiful metallic lustre; mass of spores and net of elaters brownish-red; tubes of the elaters ·0042-·005 mm., very rarely branching, but not with numerous arms which terminate in free ends, either not distinctly narrowed, smooth, or swollen, and then provided with a short spine, or more rarely obtuse; spirals two to four, usually three, flat, when matured armed with numerous spines, separated by depressions twice as broad as the spirals; spores ·01-·0116 mm. diam., with a stout but smooth membrane.—*Rtfki. Mon.*, 262.

On dead wood. (Fig. 201, 230, 231.)

a. **genuina.**
Sporangia cylindrico-turbinate, with a steel lustre or opaque, dark brown, stems in fascicles, distinctly connate, rusty-brown.

β. **Neesiana.**
Sporangia cylindrical, in the upper part a little swollen and rounded, of a steel lustre, shining black, or dark-brown, without a stem, growing together on a common hypothallus.

γ. **tubulina.**
Sporangia collected in groups, angular by mutual pressure, connate amongst themselves, slightly convex at the apex, entirely without stem, with a steel lustre or dark brown.

δ **plasmodiocarpia.**
Plasmodiocarp with an irregular form, the wide base grown to a rounded hypothallus.

Clathroides pyriforme, Hall, t. i., f. 5 (1742).
Trichia, Hall, t. 48, f. 5, No. 2167 (1798).
Lycoperdon vesparium, Batsch, t. 30, f. 172 (1786).
Stemonitis cinnabarina, Roth. Fl. Germ., 347 (1788).
Lycoperdon favaceum, Schr. Fl. Bav., ii., 667 (1789).
Trichia pyriformis, Hoffm. V. Cr., t. i., f. 1 (1790).
Stemonitis fasciculata, Pers. in Gmel. Sys., 1468 (1791).
Stemonitis vesparia, Gmel. Sys., 1070 (1791).
Trichia rubiformis, Pers. Disp., t. i., f. 3, t. iv., f. 3 (1797); Berk. Ann. N. H., No. 218; Cooke Hdbk., No. 1177.
Trichia rubiformis, *β minor*, Pers. Disp., 54 (1797).
Lycoperdon ferrugineum, Hedw., t. x., f. 1-4 (1802).

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Trichia chalybea, Chev. Fl. Par., t. 9, f. 24 (1827).
Trichia Neesiana, Corda Ic., i., f. 288 c (1837).
Trichia Ayresii, B. & Br. Ann. N. H., No. 390; Cooke Hdbk., No. 1179.

81. Hemiarcyria clavata. (*Pers.*)

Sporangia simple, more or less clavate, yellow, shining, with a stem of the same colour, or reddish at the base; mass of spores and capillitium yellow, ochrey-yellow, or ochrey-olive, or else brownish-ochre; tubes of elater network ·00415 mm. diam., very often forked, but not with numerous arms, which terminate in free obtuse, now and then slightly swollen ends; spirals five, very thin, distinctly running on the outside, separated by intervening depressions from two to three times as broad as the spirals; spores ·0083-·0092 mm. diam., delicately warted.—*Rtfki. Mon.*, 264.

On decayed wood. (Figs. 205, 207, 210, 238.)

Clathrus pedatus, Schm. Ic., t. 33, f. 1, 17 (1776).
Sphærocarpus pyriformis, Bull., t. 417, f. 2 (1791).
Stemonitis pyriformis, Gmel. Sys., 1469 (1791).
Trichia pyriformis, Sibth. Fl. Ox., 406 (1794); Sow., 400, f. 6.
Trichia clavata, Pers. Disp., p. 11 (1797); Eng. Fl., v., 320; Cooke Hdbk., 1183.
Trichia citrina, Schum. Saell., 1460 (1803),
Arcyria trichioides, Rudolph, Linnæa, p. 120 (1829).
Trichia erythropus, Borszczow (1856).
Trichia obtusa, Wigand, p. 30, t. 11, f. 4 (1863).
Trichia Thwaitesii, B. & Br., Ceylon Fungi, No. 776 (1873).

82. Hemiarcyria serpula. *Scop.*

Plasmodiocarp vein-like, creeping, usually combined into a loose net, mass of spores yellow; tubes of net ·00415 mm. wide, very often furcate, terminating in numerous free ends which are not conspicuously narrowed, more or less one-and-a-half times the diameter of the capillitium in length; spirals three to four, thin, but little prominent, separated by depressions three to four times as broad as the spirals, covered with numerous long spines of variable length.—*Rtfki. Mon.*, 266.

On rotten branches, leaves, &c. (Figs. 200, 227, 228.)

Mucor serpula, Scop. Fl. Carn., t. 65 (1772).
Lycoperdon lumbricale, Batsch., f. 174 (1786).
Trichia spongioides, Vill. Fl. Dauph., 1061 (1789).
Stemonitis lumbricalis, Gmel. Sys., 1470 (1791).
Trichia reticulata, Pers. Disp., 10 (1797); Ic. & Desc., t. 12, f. 1.

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Trichia serpula, Pers. Disp. 10 (1797); Eng. Fl. v., 320; Cooke Hdbk., 1189.
Trichia serpula, β *spongioides*, Pers. Syn., 181 (1801).
Trichia venosa, Schum. Saell., 1456 (1803).
Hyporhamma reticulatum, Corda Ic., v., 34 (1842).
Trichia retiformis, Payer. Crypt., f. 574 (1850).

Family 17. Arcyriaceæ.

Sporangia or æthalia without lime; capillitium of tubes more rarely simple, usually branched, combined into a net, their walls provided with warted, ringlike, or borderlike thickenings; walls of the sporangium, mass of capillitium and spores, usually uniformly coloured in the same sporangium; the colouring of the very same species changing within very wide limits, usually red, more rarely yellow or whitish; wall of sporangia usually simple, often provided with thickenings in the inner side, or more rarely in certain places bifurcated, the bifurcations consisting of coloured cells; æthalium with nearly naked sporangia, covered with a two-layered tegument, containing numerous coloured cells of variable dimensions.—*Rtfki. Mon.*, 267.

Genus 37. **ARCYRIA.** *Hill.*

Sporangia of a regular shape, stipitate, dehiscing by a circular fissure, the upper portion evanescent, the lower part springing from an immediate prolongation of the stem in the form of a drinking-glass; capillitium of numerous arms either grown to the receptacle or fixed in the midst of the closed tubes of the stem.—*Rtfki. Mon.*, 270.

83. **Arcyria punicea.** *Pers.*

Sporangia more or less ovate, of a beautiful lustre, usually with an elongated erect stem; colour of the walls of the sporangia, tubes, stem, mass of capillitium and spores when mature, variable, mostly of a clear red or carmine-brown, more rarely nut-brown, now and then dirty-ochre, bright pale flesh-colour, or rusty-brown; tubes of the net of the capillitium very much flattened, ·0033 mm. diam.; thickenings in the form of half rings or rings, or spines with half rings standing in rank, ·00083 mm. high, encircling the thread in a spiral with a very diffuse twist; spores smooth, ·0067-·0075 mm. diam.—*Rtjki. Mon.*, 268.

On rotten stumps. (Fig. 190, 192, 197.)

Clathroides purpureum, Mich., t. 94, f. 1 c (1729); Hall., pl. i., f. 6 (1742).
Clathrus pediculatus, Guett. Obs., 1, 16 (1747).
Arcyria pedicula, Hill, p. 47 (1751).
Clathrus denudatus, Linn., sp. pl. 1179 (1753).

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Trichia, Hall, No. 2164, t. 48, f. 6 (1768).
Mucor clathroides, Scop. Carr., ii., 492 (1772).
Mucor pyriformis, Leers. Fl. Herb., 1135 (1775).
Clathrus pedunculatus, Batsch. El., p. 141 (1783).
Lycoperdon rufum, Dicks Cry. fasc. i., p. 25 (1785).
Stemonitis denudata, Rehl. Fl. Cant. (1786).
Embolus crocatus, Batsch., t. 30, f. 176 (1786).
Stemonitis crocata, Willd. Fl. Ber., 1189 (1787).
Stemonitis coccinea, Roth. Fl. Germ., i., 548 (1788).
Trichia denudata, Vill. Fl. Dauph., 1060 (1789); Purt. Mid. Fl., t. 24, f. 2; Sow., t. 49.
Trichia graniformis, Hoffm. V. Cr. i., p. 3 (1790).
Trichia cinnabaris, Bull., t. 502, fig. 1, b. c. (1791).
Stemonitis crocea, Gmel. Sys., 1467 (1791).
Trichia rufa, With. Arr., iii., p. 478 (1795).
Arcyria punicea, Pers. Disp. p. 10 (1797); Eng. Fl., v., 318; Cooke Hdbk., No. 1170; Fungi. Britt., ii., 520.
Trichia purpurea, Schum. Saell., 1472 (1803).
Arcyria rufa, Schm. Saell., 1486 (1803).
Arcyria melanocephala, Schum. Saell., 1484 (1803).
Arcyria conjugata, Schum. Saell., 1485 (1803).
Arcyria cincta, Schum. Saell., 1480 (1803).
Arcyria cylindrica, Schum. Saell, 1486 (1803).
Trichia cinnabaris, DC. Fl. Fr., No. 688 (1805).
Arcyria fusca, Fr. Gast., p. 17 (1818).
Arcyria vernicosa, Rtfki. Mon. Supp., p. 36.

84. Arcyria pomiformis. *Roth.*

Sporangia more or less globose, usually together with the stem erect; colour bright ochrey-yellow, more rarely ochre, or ochre with a milky tinge; tubes of the net of the capillitium, without regard to the expansions, ·0023-·0042 mm. diam.; thickenings in the form of very short spines, thickly scattered, but without order, all the tubes containing air; spores smooth, ·0075-·0083 mm. diam.—*Rtf'ki. Mon.*, 271.

On decayed wood.

Stemonitis pomiformis, Roth. Fl. Germ., i., 548 (1788).
Stemonitis ochroleuca, Trent. in Roth., 221 (1797).
Stemonitis lutea, Trent., 221 (1797).
Arcyria umbrina, Schum. Saell., 1479 (1803); Berk. Ann. N. Hist., No. 389; Cooke Hdbk., No. 1174.
Arcyria silacea, Ditm. t. 8 (1817).
Arcyria ochroleuca, Fr. S. M., iii., 181 (1829); Berk. Ann. N. Hist., No. 115; Cooke Hdbk., No. 1175.
Arcyria lutea, Schwz. Fungi Car., 2339 (1831).
Arcyria globosa, Weinm, teste Fr.
Stemonitis ochracea, Opiz. herb.

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85. Arcyria cinerea. *Bull.*

Sporangia ovate, or elongated-ovate, with an even, long, erect, straight stem; mass of capillitium and spores usually bright-grey, more rarely greyish flesh-colour, greyish-yellow, straw-colour, or dull yellow; tubes of capillitium developed in the interior, and on the outside of variable width, with variable thickenings, those of the interior reaching ·0042-·005 mm., and those of the outside ·0021-·0025 mm. diam. Thickenings of the inner and outer not equally spiny, but those of the interior warty, and the external very spinulose; spores ·0066-·0083 mm. diam., smooth.—*Rtfki. Mon.*, 272.

On stumps. (Figs. 182-185, 193.)

Clathrus recutitus, Linn. Sp., 1649 (1764).
Trichia, Hall., No. 2166 (1768).
Trichia cinerea, Bull., t. 477, f. 3 (1791).
Stemonitis recutita, Gmel. Sys., 1467 (1791).
Stemonitis cinerea, Gmel. Sys., 1467 (1791).
Arcyria albida, Pers. Disp., t. 1, f. 2 (1797).
Stemonitis glauca, Trent., p. 221 (1797).
Arcyria cinerea, Schum. Saell., 1480 (1803); Fl. Dan., t. 1975, f. 1; Eng. Fl., v., 318; Cooke Hdbk., No. 1172.
Trichia carnea, Wall. in litt.
Arcyria carnea, Wallr. Fl. Germ., 2234 (1833).
Arcyria trichioides, Corda Ic., ii., f. 86 (1838).
Stemonitis grizea, Opiz. in Lotos, 215 (1855).
Arcyria pallida, B. & C. Grev. (1873), No. 365.
Arcyria stricta, Rtfki. Mon. Supp., p. 36.

86. Arcyria Friesii. *B. & Br.*

Sporangia gregarious, globoso-ovate, stipitate, cinereous; capillitium with very confluent tubes of variable thickness, those in the centre being the stoutest; tubes of the centre only slightly warted, or smooth, those of the exterior delicately warted; capillitium coarser than in *A. cinerea*; spores glaucous, globose, ·009-·01 mm. diam.—*Ann. N. Hist.*, No. 1602.

On sawdust. (Figs, 251, 259.)

Arcyria Friesii, B. & Br. Ann. N. Hist., No. 1602; Grevillea, v., p. 13.
Arcyria cinerea, Fr. S. M. iii., 180, not *Bull.*

87. Arcyria incarnata. *Pers.*

Sporangia in the type ovate, with an evanescent, short, erect stem, crowded in clusters; mass of spores and capillitium usually flesh-colour, more rarely rosy or umber, exceptionally ochre or

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carmine-brown ; net of the capillitium of cylindrical tubes ·0042 mm. diam. ; thickenings in the form of a border of half rings or spines, or half rings standing in rank, more sharp pointed than stout, ·0008 mm. ; spores smooth, ·006-·0075 mm.—*Rtfki Mon.*, 275.

On rotten wood. (Figs. 187, 199.)

Clathroides purpureum, Mich., t., 94, f. 2 (1729).
Arcyria sessilis, Hlll, p. 47 (1751).
Clathrus ramosus, a., Retz. Vet. Hand., 253 (1769).
Lycoperdon hypoxylon, Pallas., ii., 503 (1771).
Clathrus adnatus, Batsch., p. 141 (1783).
Stemonitis trichia, Roth. Fl. Germ., l., 549 (1788).
Stemonitis lilacina, Schr., Fl. Bav., ii., 1784 (1789).
Stemonitis incarnata, Pers. in Gmel., 1467 (1791).
Trichia cinnabaris, Bull., t. 502, f. 1 D (1791).
Arcyria incarnata, Pers. Obs., t. v., f. 4, 5 (1796) ; Eng. Fl., v., 318 ; Cooke Hdbk., 1171.
Stemonitis carnea, Trent., p. 222 (1797).
Stemonitis globosa, Trent., p. 222 (1797).
Trichia flexuosa, Schum. Saell., 1465 (1803).
Arcyria lilacina, Schum. Saell., 1476 (1803).
Arcyria carnea, Schum. Saell., 1477 (1803).
Arcyria deutata, Schum. Saell., 1478 (1803).
Arcyria rosea, Spr.
Arcyria incarnata, β flexuosa, Fr. S. M., iii., 179 (1829).
Arcyria nutans β exigua, Bong. in Weinm., 609 (1836).
Arcyria flexuosa, Rabh. Fl. Cry., 2158 (1844).
Arcyria adnata, Rtfki. Mon. Supp., p. 36.

88. Arcyria nutans. *Bull.*

Sporangia cylindrical in the typical form, with a short, disappearing stem, so as to be seemingly sessile ; capillitium much relexed, drooping ; mass of spores and capillitium of a dull yellow colour, resembling that of chamois leather, or more rarely brownish-yellow ; tubes of the net of the capillitium when fully developed of variable width, ·0033-·0042 mm. ; thickenings in the form of spines cover the thick tubes, amongst which others are met with, dispersed without order, having rings or half rings ; spores ·0075-·0083 mm. diam., smooth.—*Rtfki. Mon.*, 277.

On rotten wood.

Clathroides flavescens, Mich., p. 214 (1729).
Clathroides longissimum, Hall, p. 10 (1742).
Clathrus ramosus, β. Retz. Vet Handl., 253 (1769).
Trichia nutans, Bull., t. 502, f. 3 (1798) ; Sow., t. 260.
Stemonitis nutans, Gmel., Sys., 1467 (1791).
Arcyria flava, Pers. Obs., i., 85 (1796) ; Grev., t. 309.

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Stemonites amœna, Trent., p. 222 (1797).
Trichia elongata, Schum. Saell., 1464 (1803).
Arcyria alutacea, Schum. Saell., 1474 (1803).
Arcyria nutans, Grev. Fl. Ed., p. 455 (1824); Eng. Fl. v., 319; Cooke Hdbk., No. 1173.
Arcyria pallens, Wallr. in litt.
Arcyria straminea, Wallr. Crypt. Germ., 2232 (1833).
Arcyria nutans, c, *minor*, Bong., in Weinm, p. 609 (1836).

89. Arcyria ferruginea. *Sauter.*

Sporangia ovate, stem usually short, standing on a narrow substratum; mass of spores and capillitium usually brick-red, now and then ferruginous, reddish-ochre or ochre; capillitium not very much entangled, tubes three-sided, with rounded angles, one side wall very thick, border-like parallel to itself, provided with erect thickenings, the two others furnished with irregular net-like delicate reticulations; its width exhibits very variable increase oscillating even in the net of one sporangium, and mixed without consideration; spores coloured whilst living, ·0083-·011 mm. diam.—*Rtfki. Mon.*, 280.

On rotten wood, &c. (Fig. 194.)

Arcyria ferruginea, Sauter., p. 316 (1811).
Arcyria lateritia, DeBy. Mycet., 24 (1859),
Arcyria ferruginea, Fckl. Sym., p. 337 (1869); Berk. & Br. Ann. Nat. Hist., No. 1603; Grevillea, v., p. 13.
Arcyria intricata, Rtfki. Mon. Supp., p. 37.

ARCYRIA.

A. Capillitium of numerous branches grown to the receptacle.
I. Sporangia ovate or elongated.
† Tubes of the capillitium of equal thickness throughout their whole length. . . . . PUNICEA.
†† Tubes of the capillitium expanded in the centre of the sporangium, and thinner at the margin.
! Sporangia with a simple erect stem. CINEREA.
!! Several stems grown together in a bundle. . . . . *digitata.*
II. Sporangia spherical. . . POMIFORMIS.

B. Lower arms of the capillitium grown in the midst of the cells filling the tube of the stem.

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I. Tubes of the capillitium cylindrical.	
† Thickenings strongly band-like, describing a spiral or diffuse twist, with the rest of the tube covered with very small spines.	
! Tubes of equal thickness throughout its entire length. . . .	INCARNATA.
!! Tubes in the upper part of the capillitium broader than in the lower.	*affinis*.
†† Thickenings strongly spiny, not numerous, mixed together without order in a diagonal band. .	NUTANS.
††† Thickenings exclusively spiny. .	*ærstedtii*.
†††† Thickenings spiny, but with the spines united amongst themselves, forming a thin, irregular network on the surface of the tubes.	*dictyonema*.
II. Tubes of capillitium triangular, with the angles rounded. Thickenings on one side band-like, on the two others irregularly reticulated. . .	FERRUGINEA.

Genus **38.** **LACHNOBOLUS.** *Fries.*

Sporangia stipitate, or sub-stipitate, splitting irregularly ; net of the capillitium with numerous arms grown uniformly to the whole surface of the wall of the sporangium.—*Rtfki. Mon.*, 281.

90. **Lachnobolus congesta.** *B. & Br.*

Sporangia sessile, crowded together in orbicular masses, shining, yellowish umber; capillitium of branched threads of the same colour as the spores, warted ; spores globose, ·0075-·01 mm., yellowish umber.—*Ann. Nat. Hist.*, No. 1604, t. 9, fig. 2.

On dry wood.

Genus **39.** **DERMODIUM.** *R.*

Simple sporangium provided with a wall the single membrane of which is covered in numerous places with irregularly mixed coloured cells; capillitium of tubes combined into a net, grown uniformly to the entire inner surface of the wall.—*Rtfki. Mon.*, 284.

Genus **40.** **LYCOGALA.** *Mich.*

More or less rounded, variously coloured æthalia, joined together intricately into an obtuse vein-like, naked plasmodiocarp ; outer

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part of the combination formed into a double cortex, covered on the outside with coloured cells ; tubes of the capillitium originating in the inner stratum of the cortex, penetrating in numerous places its inner wall, branching within the body of the æthalium, and formed into a loose net in which many arms run out in free, blunt ends.—*Rtfki. Mon.*, 285.

91. Lycogala epidendrum. *Bux.*

Æthalium roundish, sociable, large as a pea, shining, surface distinctly warted, rose-colour, but commonly dull-brown with a shade of red ; mass of spores and capillitium very variably coloured, violet-red, purple, rosy, dull clay-colour, greenish clay colour, or almost greyish ; thickenings of the tubes of the capillitium only distinct in the young state, when dry the surface only exhibits irregular wrinkles ; spores very small, smooth, ·0033- 0058 mm. diam.—*Rtfki. Mon.*, 285.

On stumps. (Fig. 1, 7 to 12.)

Fungus coccineus, Ray Syn., ii., 336 (1690).
Fungus sanguineus, Bocc. Mus., p. 304 (1697).
Fungus non vescus, Læs. Fl. Prus., 96 (1703).
Lycoperdon sanguineum, Rupp. Fl. Jen., 304 (1718).
Bovista miniata, Dill. Cat. Pl., 197 (1719).
Lycoperdon epidendron, Bux. Hall, p. 203 (1721); Fl. Dan., t. 720; Light. f. Fl. Scot., No. 1068 ; Holms. Ot., t. 31 ; Bolt., t. 119, f. 1; Sow., t. 52; Purt. Midl. Fl., p. 701 ; Rehl. Cant., p. 566 ; With. Arr., iv., p. 457.
Lycogala globosum, Mich., t. 95, f. 2 (1729).
Lycoperdon sanguineum, Buxb., t. 29, f. 2 (1740).
Lycoperdon sphæricum, Gled. Meth., 150 (1753).
Mucor iii. sphæricus, Gled. Meth., 161 (1753).
Mucor secundus, Schff., t. 193 (1762).
Lycogala sessile, Retz., Ac. Holms., 254 (1769).
Mucor lycogala, Scop. Carn., ii., 1645 (1772).
Mucor fragiformis, Schff. Bar., No. 283 (1774).
Lycoperdon variolosum, Huds. Fl. Ang., 645 (1778).
Lycoperdon epiphyllum, Huds. Fl. Ang., 645 (1778).
Lycoperdon pysiforme, Jacq. Misc . t. 7 (1788).
Galeperdon epidendron, Wigg. Fl. Holsat, 1148 (1780).
Lycoperdon chalybeum, Batsch. El., p. 155 (1781).
Lycoperdon verrucosum, Batsch. El., p. 155 (1781).
Reticularia rosea, DC. Bullet. Phil., f. 8 A, B, C (1798).
Lycogala miniata, Pers. Obs., ii., 26 (1790) ; Grev. S. C. Fl., t. 38 ; Nees., t. 8, f. 97 ; Gray. Arr., i., 568,
Lycogala punctata, Pers. Syn., p. 158 (1801).
Lycogala plumbea, Schum. Saell., 1408 (1803).
Lycogala ferruginea, Schum. Saell., 1406 (1803).

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Reticularia miniata, Poir. Ency., viii., 22 (1808).
Reticularia punctata, Poir. Ency., viii., No. 21 (1808).
Reticularia rosea, Poir. Ency. viii., No. 4.
Lycogala miniata, Johnst. Fl. Berw.
Lycogala epidendrum, Fr. S. M., iii., 80; Berk. Engl. Fl., v. 307; Cooke Hdbk., No. 1095.
Lycogala affinis, B. & Br., Ceylon Fungi, No. 735.

92. Lycogala flavo-fusca. *Ehr.*

Æthalia rounded, large as a filbert or a good-sized pear; surface opaque, smooth, or indistinctly reticulated, greyish-umber; mass of spores with the capillitium greyish-umber; spores very small, delicately spinulose, ·0033-·0058 mm. diam.—*Rtfki. Mon.*, p. 288.

Diphtherium flavo-fuscum, Ehr. Syl., p. 27 (1818).
Reticularia flavo-fusco, Fr. S. M., iii., 88 (1829); B. & Br. Ann. N. Hist., No. 591.
Reticularia testacea, Wallr. Fl. Germ., 209 (1833).

[*Lycogala parietinum*, Fr. S. M., iii., 83, Ann. N. Hist., No. 381; Cooke Hdbk., 1096, is rejected by Rostafinski from the Myxogastres, and referred by him to the genus *Mycogala*.]

Genus **41. CORNUVIA.** *R.*

Either with a simple sporangium or a vein-like plasmodiocarp, splitting irregularly or with a deciduous lid; capillitium of tubes formed into a loose net, running out into numerous free ends, not grown anywhere to the walls of the sporangium.—*Rtfki. Mon.*, 289. (Fig. 189.)

93. Cornuvia metallica. (*B. & Br.*)

Sporangia globose, flattened above, of a bright metallic lustre, narrow base grown to the substratum; threads of capillitium stout ·01-·024 mm. broad, knotted, running out in numerous free, blunt, or sharp-pointed ends; spores ·01 mm. diam., warted.—*Rtfki. Mon. Supp.*, 35.

On decorticated sticks.

Physarum metallicum, Berk. Mag. Zool. and Bot., No. 29, t. 3, f. 8; Cooke Hdbk., No. 1139; Cooke Myx., pp. 16 ante.

94. Cornuvia circumscissa. *(Wall.)*

Either sporangia globose, flattened, splitting in a circumsessile manner, with a deciduous lid, or plasmodiocarp vein-like, twisted together, creeping, splitting along the seam or irregularly, surface opaque chesnut-brown; capillitium of thin-walled tubes

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·0025 mm. wide, extending into numerous free arms, with the ends usually slightly swollen; rarely with thickenings in the form of scattered, curved, sharp pointed spines, ·0016 mm. long; spores smooth, ·0083-·0092 mm. diam.—*Rtfki Mon.*, 290.

Lignidium quercinum, Fr. Stirp. Fenisj., 83 (1825).
Trichia circumcissa, Wallr. Fl. Germ., 2219 (1833).
Arcyria glomerata, Fr. S. V. S., 457 (1849).
Ophiotheca chrysosperma, Curr. Micr. Journ. (1854), p. 240, t. ix., f. 1, 5; Cooke Hdbk., No. 1176.
Trichia Curreyi, Crouan. Fin., p. 16 (1867).

Genus **42.** **OLIGONEMA.** *R.*

Sporangium simple, splitting irregularly; capillitium composed of numerous, free, terminating, closed tubes.—*Rtfki. Mon.*, 291.

(Fig. 198.)

Family 18. PERICHÆNACEÆ.

Sporangium or plasmodiocarp with single or double walls, the outer of which often containing lime; capillitium without characteristic thickenings, combined into a net grown to the wall of the upper part of the sporangium, very often almost obsolete.—*Rtfki. Mon.*, 291.

Genus **43.** **PERICHÆNA.** *Fries.*

Either plasmodiocarp, or sporangium often splitting with a regular deciduous lid; capillitium either combined into a thick net with some of its arms grown to the upper part of the wall of the sporangium, others running through free, or else hardly evident, with scarcely a trace to be found in the whole sporangium; tubes of the capillitium without external thickenings, but sometimes notched.—*Rtfki. Mon.*, 292.

95. **Perichœna depressa.** *Lib.*

Sporangia very much flattened, gregarious, crowded, polygonal, contiguous at the sides, brown-red, or nut-brown, shining, opening with a truncate lid; mass of spores and capillitium yellow; capillitium well enough developed, with tubes diversely produced of variable width ·008-·012 or ·025-·033 mm.; spores globose, smooth ·009-0011 mm. diam.—*Rtfki. Mon.*, 292.

Bungay. (D. Stock in Herb. Berk.)

Perichæna vaporaria, Schw. Am., 2311 (1831).
Perichæna depressa, Libert Exs., No. 378 (1837).
Stegasma depressum. Corda Ic. V., f. 13 (1842).

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96. Perichæna corticalis. *(Batsch.)*

Sporangia globose, flattened, gregarious, standing on a common hypothallus, splitting in a circumscissile manner with a deciduous lid, in the typical form yellow-brown, now and then thickened with deposits of lime, dull-grey or milky-white; capillitium slightly evident, with tubes ·008-·025 mm. diam.; spores smooth, ·018-·0125 mm.—*Rtfki. Mon.*, 293.

On bark. (Fig. 188.)

Lycoperdon corticale, Batsch. El., p. 155 (1783).
Sphærocarpus sessilis, Bull., t. 417, f. 5 (1791).
Trichia gymnosperma, Pers. Obs., vi., f. 1 & 2 (1796).
Trichia circumscissa, Schrad. p. 19 (1797).
Licea circumscissa, Pers. Syn., 196 (1801).
Physarum luteo-album, Schum. Saell., 1430 (1803).
Tubulina circumscissa, Poir. Ency., viii., 5 (1808).
Perichæna populina, Fr. Gast., 12 (1817); Grev., t. 252; Eng. Fl., v., 321; Cooke Hdbk., No. 1192.
Perichæna populina, *β sorbea*, Weinm. in Fr. S. M., iii., 192 (1829).
Perichæna quercina, Fries Gast., p. 12 (1817).
Trichia varia subrufescens, Bong. Herb.
Licea quercina, Wallr. Fl. Cry., 2103 (1833).
Licea artocreas, B. & Rav. Fungi Car., ii., 82.
Perichæna artocreas, B. & Rav. Grev., No. 370 (1873).

97. Perichæna fusco-atra. *(Sibth.)*

Sporangia obovate or globose, chestnut or blackish, splitting in a truncate manner, with a very convex lid; capillitium scarcely evident, with tubes ·0017 mm. wide; spores warted, ·0125-·013 mm. diam.—*Rtfki. Mon.*, 294.

On fir wood.

Mucor lycoperdioides, Scop. Ann., iv., t. i., f. 11 (1772).
Trichia fuscoatra, Sibth. Fl. Ox., 1152 (1794).
Sphærocarpus sessilis, Sow., t. 258 (1803).
Licea circumscissa, *β abietina*, A. & S., p. 108 (1805).
Perichæna abietina, Fr. Gast., p. 17 (1817); Eng. Fl., v., 321; Cooke Hdbk., No. 1191.
Perichæna microcarpa, Sauter. Rabh. DC. Fl., No. 2180 (1844).

98. Perichæna decipiens. *B. & Br.*

Sporangia aggregated, rounded, reddish-brown, circumscissile; capillitium branched; spores of two kinds, the larger ·05 mm., the smaller ·025 mm. diam., bright-yellow.—*Ann. Nat. Hist.*, No. 1605, t. ix., fig. 3.

On fir cones.

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APPENDIX.

Since the greater portion of this work was in type, and printed, we received from Dr. Rostafinski a supplement to his Monograph, in which many alterations are made, especially in the sequence of the genera, which we could not alter without reprinting, hence we must rest content with indicating, by way of appendix, the alterations which he has made, preceded by a synopsis of the genera, as arranged by him in his supplement. Two of the former genera are cancelled, and two new ones added. The latter are indicated by an asterisk (*).

Sub-Division I. **AMAUROSPORÆ.**

Sect. A. *ATRICHÆ.*

Order I. PROTODERMEÆ.

Family 1. Protodermaceæ.

Genus 1. *Protoderma.*

Sect. B. *TRICHOPHORÆ.*

Order II. CALCAREÆ.

Family 2. Cienkowskiaceæ.

Genus 2. *Cienkowskia.*

Family 3. Physaraceæ.

Genus 3. *Badhamia.*
„ 4. *Physarum.*
„ 5. *Fuligo.*
„ 6. *Craterium.*
„ 7. *Leocarpus.*
„ 8. *Crateriachea.*
„ 9. *Tilmadoche.*

Family 4. Didymiaceæ.

Genus 10. *Chondrioderma.*
„ 11. *Didymium.*
„ 12. *Lepidoderma.*

Family 5. Spumariaceæ.

Genus 13. *Diachea.*
„ 14. *Spumaria.*

Order III. AMAUROCHÆTEÆ.

Family 6. Echinosteliaceæ.

Genus 15. *Echinostelium.*

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Family 7. STEMONITACEÆ.
Genus 16. *Lamproderma.*
„ 17. *Comatricha.*
„ 18. *Stemonitis.*
Family 8. AMAUROCHÆTACEÆ.
Genus 19. *Amaurochæte.*
Family 9. BREFELDIACEÆ.
Genus 20. *Brefeldia.*
Family 10. ENERTHEMACEÆ.
Genus 21. *Enerthenema.*

SUB-DIVISION II. **LAMPROSPORÆ.**

Sect. A. *ATRICHÆ.*

ORDER IV. ANEMEÆ.
Family 11. DICTYOSTELIACEÆ.
Genus 22. *Dictyostelium.*
Family 12. LICEACEÆ.
Genus 23. *Licea.*
„ 24. *Tubulina.*
„ 25. *Lindbladia.*
Family 13. CLATHROPTYCHIACEÆ.
Genus 26. *Clathroptychium.*
„ 27. *Enteridium.*

ORDER V. HETERODERMEÆ.
Family 14. CRIBRARIACEÆ.
Genus 28. *Dictydium.*
„ 29. *Heterodictyon.*
„ 30. *Cribraria.*

Sect. B. *TRICHOPHORÆ.*

ORDER VI. COLUMELLIFERÆ.
Family 15. RETICULARIACEÆ.
Genus 31. *Siphoptychium.**
„ 32. *Reticularia.*

ORDER VII. CALONEMEÆ.
Family 16. PERICHÆNACEÆ.
Genus 33. *Perichæna.*
Family 17. ARCYRIACEÆ.
Genus 34. *Cornuvia.*
„ 35. *Arcyria.*
„ 36. *Lachnobolus.*
„ 37. *Dermodium.*
„ 38. *Lycogala.*
„ 39. *Oligonema.*

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Family 18. TRICHIACEÆ.
Genus 40. *Prototrichia.**
„ 41. *Trichia.*
„ 42. *Hemiarcyria.*

pp 11. **Physarum didermoides.** (Ach.) add syn.
Didymium farinaceum, Purt. M. F., p. 273.

pp. 12. **Physarum Schumacheri.** (Spr.) add syn.
Didymium melleum, B. & Br. Cey. Fung., 751.
Didymium chrysopeplum, B. & Br. N. A. Fung., 348.

pp. 13. **Physarum Ditmari.** R.
to be substituted for
Physarum virescens. Rtfi. Mon., p. 103, add syn.
Didymium nectriæforme, B. & C. Grev., 353.
Didymium croceoflavum, B. & Br. Ceyl., No. 757.
Didymium lateritium, B. &. Br. MSS.

pp. 13. **Physarum contextum.** (Pers.) add syn.
Diderma ochroleucum, B. & C. Grev., 343.

pp. 16. **Cornuvia metallica.** R.
in place of
Physarum metallicum, B.

pp. 16. **Chondrioderma (?) Cookei.** R.
in place of
Physarum tussilaginis, B. & Br.

Chondrioderma Cookei. *R.*

Plasmodiocarp scattered, flattened ; capillitium of flimsy uncoloured threads, combined into a dense net ; spores scarcely warted, ·0011-·0125 mm., violet.—*Rtfki. Mon. Supp.*, 17.

On leaves of *Tussilago.*

Badhamia capsulifer, Cooke Fungi Britt., ser i., 526 ; ser. ii., 206.
Physarum Tussilaginis, B. & Br. Ann. N. Hist., No. 1597 ; Grevillea, v., p. 12 ; Cooke Myx., p. 16.

pp. 20. **Craterium aureum.** *Schum.*
Physarum atomum, Carm., in Hook. Herb.
Physarum sulphureum, β *atomum*, Klotsch. in Hook. Herb.

pp. 25. The genus TRICHAMPHORA is abolished.

pp. 26. **Badhamia capsulifera.** (Bull.)
exclude syn.
Badhamia nitens. Berk.

pp. 27. **Badhamia nitens.** Berk.
instead of
Badhamia pallida. Berk.
The two species being united.

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pp. 29. The genus SCYPHIUM is abolished.

pp. 29. **Badhamia rubiginosa.** (Chev.)
in place of
Scyphium rubiginosum. (Chev.)

To this genus the following species has to be added:—

We are doubtful whether both species should be recorded as British.

27*. Badhamia dictyospora. *R.*

Sporangia globose, or globoso-turbinate, splitting irregularly, or with a lid, reddish-brown, shining and whitish at the apex, stipitate; columella distinct, cylindrical, obtuse, dark, being an immediate prolongation of the lengthened stem, which is blackish-brown, stiff and brittle; spores ·011 mm., dark-violet, covered with an irregular network of thin, elevated reticulations.—*Rtfki. Mon. Supp.*, 4.

Physarum canum, Klotsch., in Hook. Herb.

Physarum rubiginosum, Berk. Eng. Fl., v., p. 315.

pp. 30. **Didymium serpula.** *Fr.*
takes the place of
Didymum complanatum. (Batsch.)

pp. 30. **Didymium clavus.** A. & S.
add syn.
Didymium clavus, Berk. Eng. Fl., v., p. 314.

pp. 32. **Didymium microcarpon.** *Fr.*
add syn.
Didymium megalosporum, B. & C. Grev., No. 318.

pp. 34. **Didymium squamulosum.** A. & S.
add syn.
Didymium neglectum, B. & Br. Cey. Fungi, No. 747.
Didymium australe, Berk. Hdbk. Flor. Nov. Zeal., p. 191.

pp. 37. **Chondrioderma deplanatum.** (Fr.)
This is substituted for
Chondrioderma physarioides (D.C.); a change of name the advisability of which is doubtful.

pp. 40. **Chondrioderma Trevelyana.** Grev.
This species is excluded as probably only referable to *C. radiatum.*

pp. 40. **Chondrioderma radiatum.** (Linn.)
add as a synonym.
Diderma Carmichaelianum. (Berk.)
which, consequently must be expunged as a species at p. 47.

pp. 41. **Chondrioderma floriforme.** (Bull.)
add as synonym.
Diderma concinnum, B. & Curt. Grev. 343.

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pp. 44. **Lepidoderma tigrinum.** (Schr.)
add as synonyms.
Diderma citrinum, Berk. Eng. Fl., p. 310.
Didymium leoninum, B. & Br., Cey. Fungi, 750.

pp. 49. **Lamproderma physaroideum.** (A & S.)
instead of
Lamproderma physaroides, R. Mon., p. 202.

pp. 50. **Lamproderma violaceum.** (Fr.)
instead of
Lamproderma violacea, R. Mon., p. 204, pp. 60.

ORDER VI. COLUMELLIFERÆ,
is substituted for "**Reticularieæ.**"
Preceding *Reticularia* the following new genus is added:—

Genus **31. SIPHOPTYCHIUM.** *R.*

Sessile, cylindrical sporangia; columella central, cylindrical, giving origin to the (not numerous) radiating tubes of the capillitium, which cross over to the wall of the sporangium.—*Rtfki. Mon. Supp.* 32.
[No British species.]

In the genus *Arcyria*, the following alteration in names has been made, changes which should not have been made without the strongest possible reasons, and yet no reason is apparent.

pp. 69. **Arcyria vernicosa.** R.
is substituted for
Arcyria punicea. Pers.

pp. 71. **Arcyria stricta.** R.
is substituted for
Arcyria cinerea. Bull.

pp. 72. **Arcyria adnata.** (Batsch).
is substituted for
Arcyria incarnata. Pers.

pp. 73. **Arcyria intricata.** R.
is substituted for
Arcyria ferruginea, Saut.

As we cannot concede the necessity or justice of the four alterations proposed in *Arcyria*, we have not altered the text, except to add the new names as synonyms, and trust that the proposed alterations will not be accepted.

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SPECIES EXCLUDED.

Perichæna picea. *B. & Br.*

Rostafinski excludes this with the following observation:—"This is, nevertheless, a Pyrenomycete. The determination and rectification of the error I leave in this case to the authors themselves."

Phelonitis strobilina. *Fr. S. V. S.* 459.

This is also excluded with a reference to *Pleosporopsis strobilorum*, Œrsted. "Bidrag til Svampenes Udviklings-historie." Natur for Videuks Meddelelser. 1865. p. 21.

Lycogala parietinum. *Fr.*

is referred to *Mycogala bicolor*, Pers.

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KEY TO THE PLATES.

Fig.

1. Lycogala epidendrum, section through the cortex.
2. Tubulina stipitata, section of plant.
3. Reticularia lycoperdon, columella and capillitium.
4. „ „ section through the cortex.
5. Enteridium olivaceum, clustered spores.
6. Reticularia lycoperdon, spore.
7. Lycogala epidendrum, tubes of capillitium.
8. „ „ cluster of plants, nat. size.
9. „ „ structure of æthalium.
10. „ „ tube grown to inner wall of cortex.
11. „ „ section of an invidual plant.
12. „ „ portions of tubes of capillitium.
13. Reticularia lycoperdon, æthalium nat. size.
14. Cribraria pyriformis, magnified sporangium.
15. Cribraria rufa, sporangium magnified.
16. Heterodictyon mirabile, sporangium magnified.
17. Dictydium cernuum, network from above.
18. „ „ sporangium.
19. „ „ „
20. Cribraria purpurea, network with thickenings.
21. Cribraria aurantiaca, network with thickenings.
22. Dictydium cernuum, network with thickenings.
23. Cribraria tenella, network with margin of receptacle.
24. Cribraria pyriformis, network with margin of receptacle.
25. Clathroptychium rugulosum, section of portion of æthalium.
26. Cribraria vulgaris, network with margin of receptacle.
27. Cribraria intricata, network with thickenings.
28. Clathroptychium rugulosum, permanent upper portion of wall of single sporangium.
29. Clathroptychium rugulosum, another view of the same.
30. „ „ diagrammatic plan of arrangement of sporangia in æthalium.

31 to 35. Stemonitis ferruginea, successive stages of growth.

36 to 39. „ „ sections of sporangium showing the columella.

40. Stemonitis fusca, section of sporangia.
41. Stemonitis ferruginea, portion of columella.

42, 43, 44. „ „ ends of columella.

45. Enerthenema elegans, section, with columella.

46, 47. Comatricha typhina, section, with columella.

48, 49. Enerthenema elegans, section, with columella.

50. Stemonitis ferruginea.
51. Comatricha Friesiana, various forms of sporangia.
52. Enerthenema elegans, magnified sporangia.
53. Echinostelium minutum, capillitium.
54. „ „ stem and capillitium.
55. Lamproderma physarioides, portion of capillitium.
56. Comatricha Friesiana, natural size.
57. Enerthenema elegans, capillitium and columella.
58. Echinostelium minutum.
59. Lamproderma physarioides, section of columella with origin of capillitium.
60. Brefeldia maxima, twin cells and threads.
61. Lamproderma columbina, section of columella.

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Fig.
62. Lamproderma physarioides, section of columella.
63. Lamproderma Schimperi, section of columella.
64. Lamproderma violacea, section of columella.
65, 66. Brefeldia maxima, sections of æthalium.
67. Amaurochæte atra, capillitium.
68. Echinostelium minutum, portion of capillitium.
69. Brefeldia maxima, diagram of twin cells.
70. ,, ,, portion of capillitium, with twin cells.
71. Physarum cinereum, plasmodium.
72. ,, ,, sporangia.
73. Physarum conglomeratum v. nephroideum, nat. size.
74. Physarum didermoides, sporangia, enlarged.
75, 76. Physarum psittacinum, sporangia, enlarged.
77. Physarum leucophæum, sporangium.
78. ,, ,, section of sporangia.
79. Physarum conglomeratum minutum, nat size.
80. Physarum nephroideum, sporangia, enlarged.
81. ,, ,, section of sporangium.
82. ,, ,, capillitium.
83. Physarum Berkeleyi, capillitium.
84. Physarum pulcherrimum, capillitium.
85. Physarum cinereum, capillitium.
86. Physarum globuliferum, section of sporangium.
87. Physarum didermoides, section of sporangium.
88. Physarum Berkeleyi, section of sporangium.
89. Physarum leucophæum, portion of wall, with threads.
90. Physarum conglomeratum, section of wall of sporangia.
91. Physarum sinuosum, section of sporangium.
92. Physarum Capense, capillitium.
93. Leocarpus fragilis, capillitium.
94. Craterum vulgare, section of sporangium.
95. Craterium minutum, cluster of sporangia.
96. Craterium vulgare, sporangia.
97. Fuligo varians, section of central stratum of æthalium.
98. Craterium leucocephalum, young sporangium.
99. Craterium Œrstedtii, sporangia.
100. Craterium leucocephalum, sporangia.
101. Fuligo varians, capillitium and spores.
102. Crateriachea mutabilis, columella and capillitium.
103. ,, ,, sporangium.
104. Fuligo varians, capillitium.
105. Craterium Friesii, sporangia.
106. Fuligo varians, section of æthalium.
107. Cienkowskia reticulata, capillitium.
108. Badhamia lilacina.
109. ,, ,, capillitium.
110, 111. Badhamia utricularis, sporangia.
112. ,, ,, capillitium.
113. Badhamia hyalina, sporangium.
114. Badhamia panicea, capillitium.
115. Scyphium rubiginosum, sporangia.
116. Badhamia panicea, sporangia.
117. Scyphium Curtisii, sporangia.
118. Badhamia macrocarpa, capillitium.
119. Scyphium Curtisii, section of sporangia.
120, 121. Badhamia macrocarpa, sporangia.
122. Chondrioderma pezizoides, section of sporangium.
123 to 127. Tilmadoche mutabilis, sporangia.
128. Didymium farinaceum, section of sporangium.

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Fig.
129. Tilmadoche nutans, sporangium.
130. Tilmadoche gracilenta, sporangium.
131. Chondrioderma Michelii, sporangium, under side.
132. Tilmadoche mutabilis, capillitium.
133. Didymium microcarpum, sporangium.
134. Didymium Fuckelianum, section of sporangium.
135, 136. Chondrioderma testaceum, sporangia.
137. Chondrioderma difforme, sporangium.
138. Chondrioderma globosum, cluster of sporangia.
139, 140, 141. Didymium macrospermum, sections of sporangia.
142. Chondrioderma spumarioides α. carcerina, nat. size.
143, 144, 145. „ „ sporangia enlarged.
146. Chondrioderma Michelii, sporangium.
147. Didymium physarioides, section of sporangium.
148. Didymium squamulosum, section of sporangium.
149, 150. Chondrioderma Michelii, sporangia.
151. Chondrioderma spumarioides β. didermoides, sections of sporangia.
152, 153. Chondrioderma radiatum, sections of sporangia.
154. Chondrioderma Œrstedtii, sporangium enlarged.
155, 156. Chondrioderma radiatum, sporangia.
157. Chondrioderma Œrstedtii, section of wall of sporangium.
158. Spumaria alba, dendritic sporangium.
159. Lepidoderma tigrinum, section of sporangium.
160. „ „ sporangium enlarged.
161, 162, 163. Chondrioderma Trevelyani, sporangia.
164, 165. Chondrioderma difforme, sections of sporangia.
166. Didymium complanatum, portion of capillitium.
167. Didymium dubium, portion of capillitium.
168. Chondrioderma Stahlii, portion of capillitium.
169. Chondrioderma calcareum, portion of capillitium.
170. Chondrioderma radiatum, portion of capillitium.
171. Didymium farinaceum, portion of capillitium.
172. Spumaria alba, portion of capillitium.
173. Didymium spumarioides, threads of capillitium passing from centre to circumference.
174. Didymium farinaceum.
175. Spumaria alba, cluster, natural size.
176. Chondrioderma Alexandrowiczii, capillitium.
177. Didymium microcarpum, part of wall, with threads.
178. Diachæa leucopoda, columella and capillitium.
179. Lepidoderma Chailettii, capillitium.
180. Didymium complanatum, section of plasmodiocarp.
181. Didymium confluens, group of crystals.
182, 183. Arcyria cinerea, sporangia.
184. „ „ portion of inner capillitium.
185. „ „ outer portion of capillitium.
186. Lachnobolus circinans, portion of capillitium.
187. Arcyria incarnata, sporangia, enlarged.
188. Perichæna corticalis, capillitium.
189. Cornuvia serpula, thread and spores.
190 & 192. Arcyria, thickenings of the walls of the sporangia.
191. Trichia varia, thickenings of the walls of the sporangia.
193. Arcyria cinerea, portion of wall of sporangium, with attached threads.
194. Arcyria ferruginea, portion of capillitium.
195. Arcyria dictyonema, portion of capillitium.
196. Arcyria Œrstedtii, portion of capillitium.
197. Arcyria punicea.
198. Oligonema nitens, threads and spores.

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Fig.
199. Arcyria incarnata, portion of network.
200. Hemiarcyria serpula, plants, natural size.
201. Hemiarcyria rubiformis, sporangia, enlarged.
202. Trichia varia, sporangia, enlarged.
303. Trichia fragilis, section of sporangium.
204. „ „ *α.* genuina, Botrytis, sporangia.
205. Hemiarcyria clavata, portion of network.
206. Didymium confluens, natural size.
207. Hemiarcyari clavata, mass of capillitium and spores.
208. Trichia varia, nigripes, diagrams of variety in form of sporangia.
209. Trichia chrysosperma, diagrams of variation in form.
210. Hemiarcyria clavata, diagrams of variation in form.
211. Trichia fallax, diagrams of variation in form.
212. Trichia varia, section of sporangium.
213. Trichia chrysosperma, tip of elater.
214, 215, 216, 217. Trichia scabra, tips of elaters.
218. Trichia varia, tip of elater.
219, 220. Trichia Decaisneana, tips of elaters.
221. Trichia fallax, tip of elater.
222. „ „ portion of elater.
223. Trichia lateritia, tip of elater.
224. „ „ portion of elater.
225. Trichia fragilis, tip of elater.
226. „ „ portion of elater.
227. Hemiarcyria serpula, tip of elater.
228. „ „ end of elater.
229. Trichia contorta, end of elater.
230, 231. Hemiarcyria rubiformis, tips of elaters.
232. Hemiarcyria Wigandii, portion of elater.
233, 234, 235. Trichia fallax, elaters variedly branched.
236. Trichia fallax, unbranched elater and spore.
237. Trichia varia, elater and spore.
238. Hemiarcyria clavata, tip of elater.
239. Trichia scabra, spore.
240. Trichia chrysosperma, spore.
241. Trichia affinis, spore.
242. Trichia Jackii, spore.

The following figures are additional, and are not contained in Rostafinski:—

243. Chondrioderma Cookei, sporangia enlarged.
244. „ „ capillitium and spore.
245. Didymium sinapinum, sporangia enlarged.
246. Lamproderma arcyrioides, var. iridea, sporangia.
247. „ „ columella and part of capillitium.
248. „ „ small portion of capillitium.
249. „ „ spores × 500.
250. Lamproderma arcyrioides, spores of typical form × 500.
251. Arcyria Friesii, sporangia, enlarged.
252. Hemiarcyria leiocarpa, sporangium and capillitium.
253. Physarum auriscalpium, sporangium enlarged.
254. „ „ capillitium and spores × 500.
255. Hemiarcyria leiocarpa, portion of elater.
256. Trichia abrupta, tips of elaters.
257. Arcyria cinerea, spores × 500.
258. Trichia scabra, var. aurea, tip of elater and spore.
259. Arcyria Friesii, capillitium and spores × 500.

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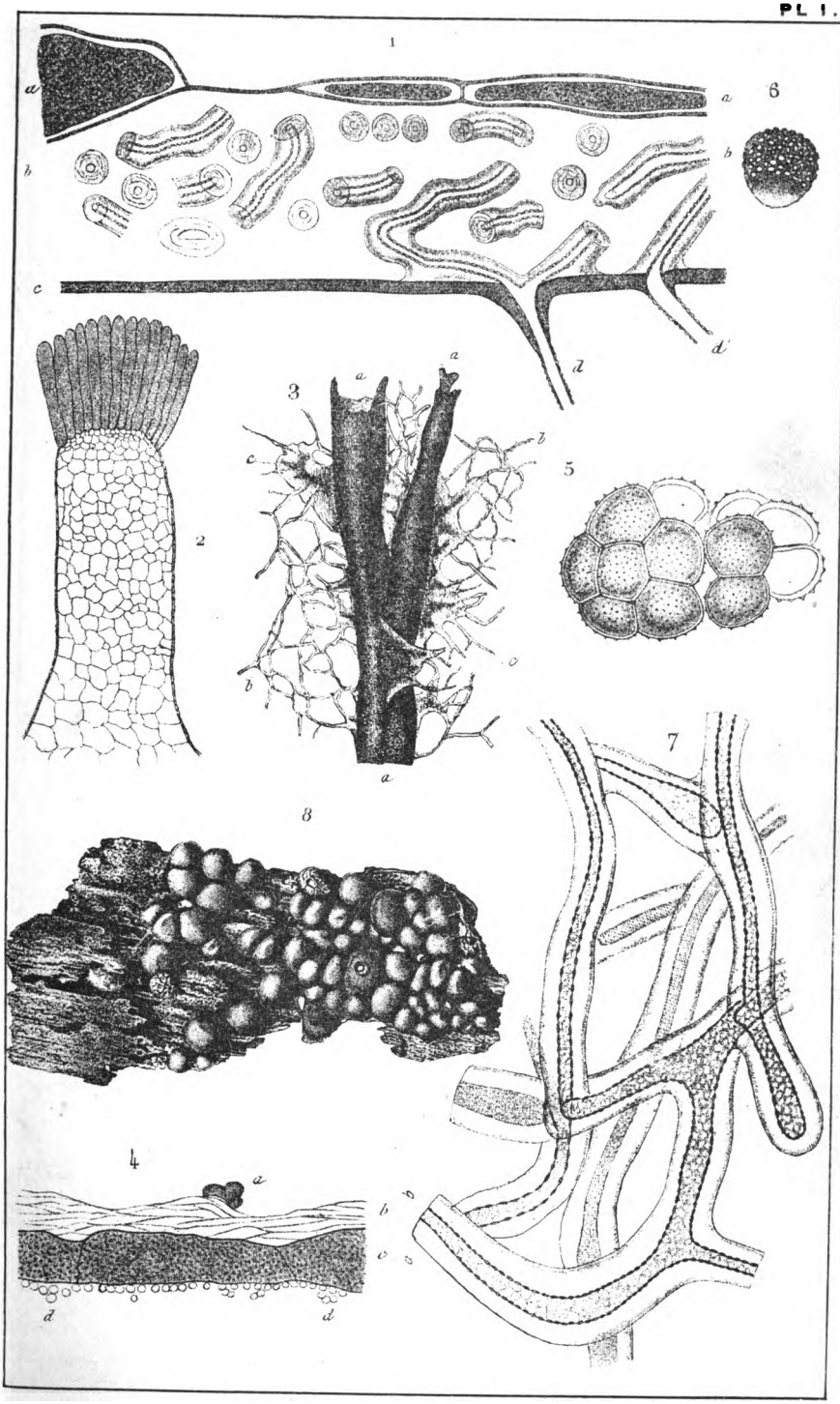

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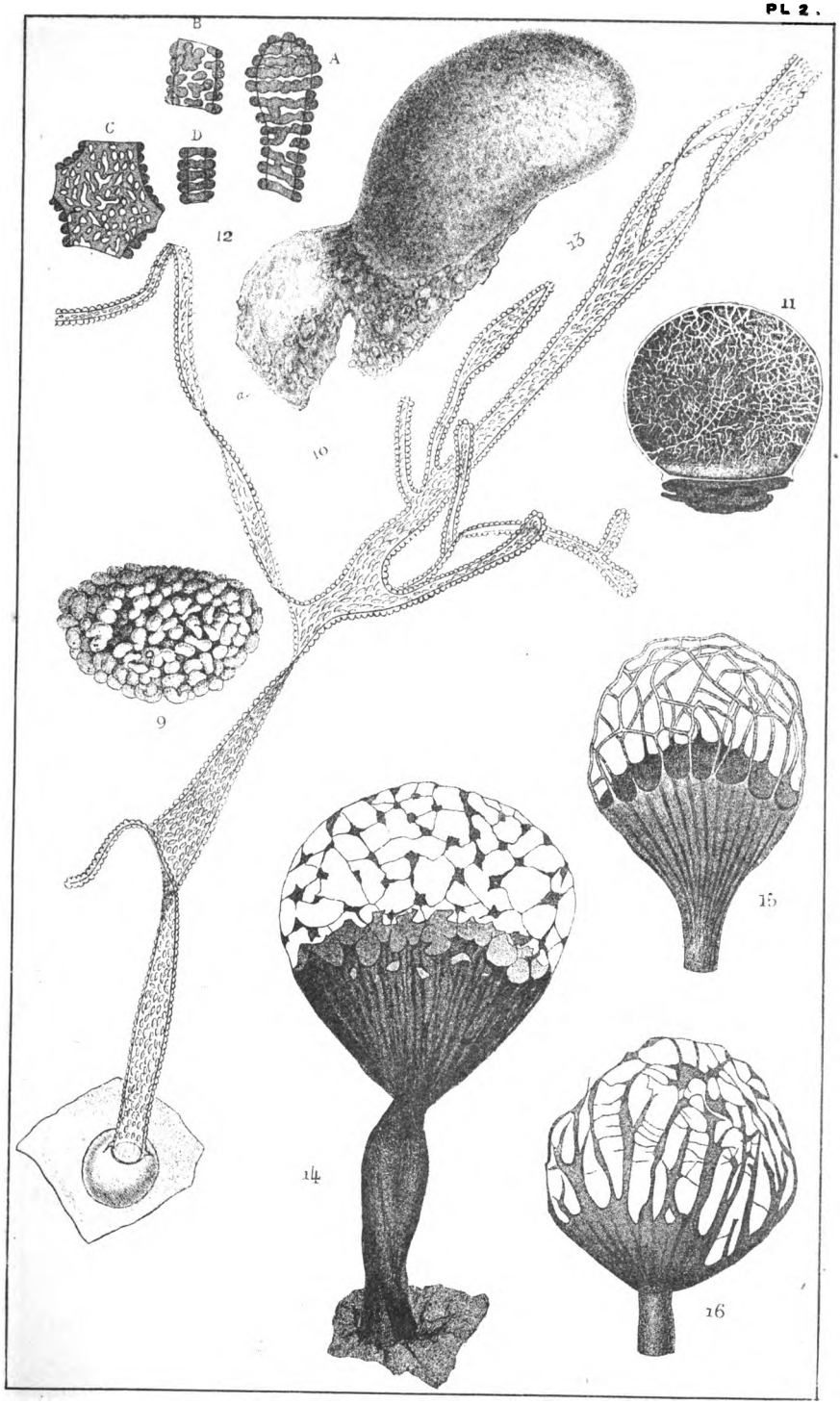

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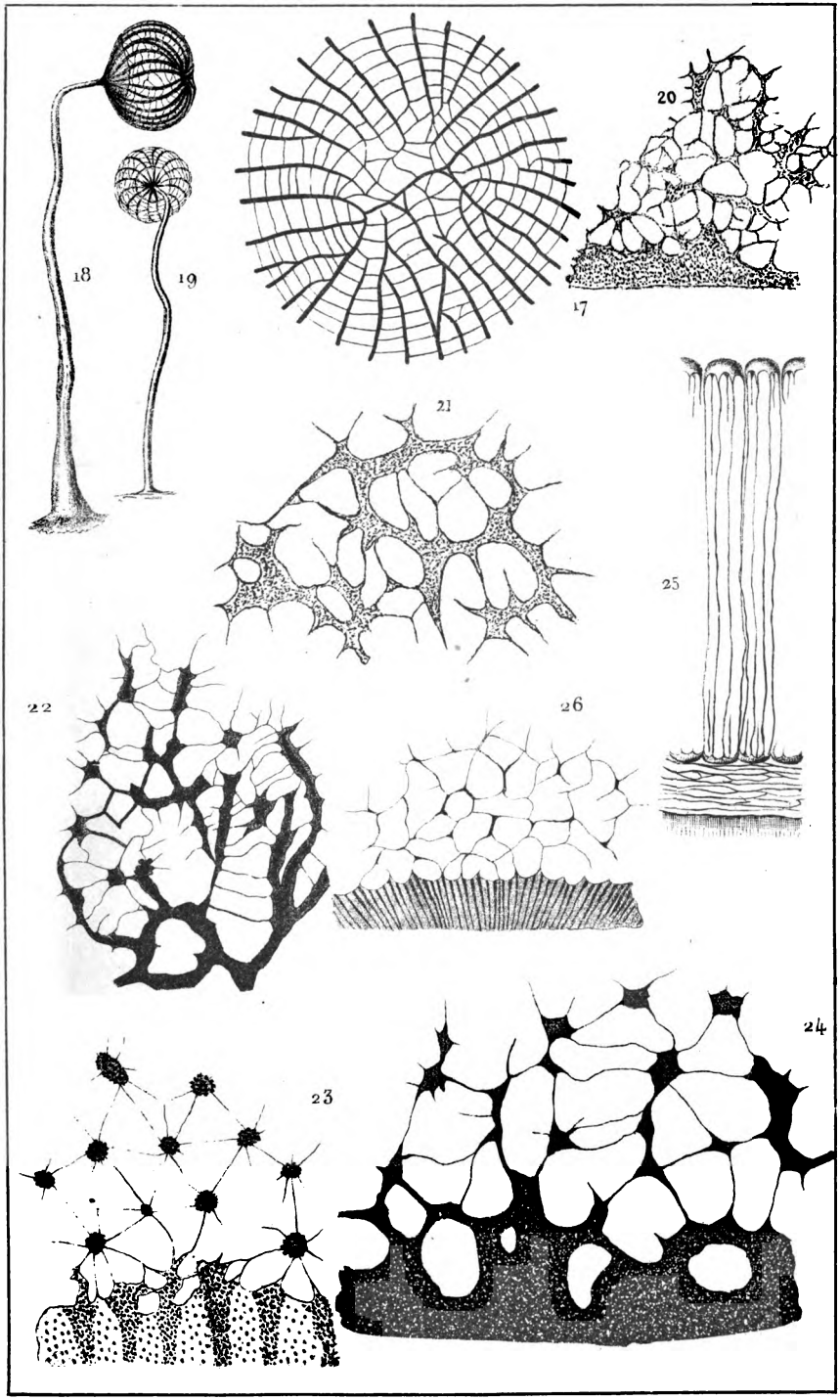

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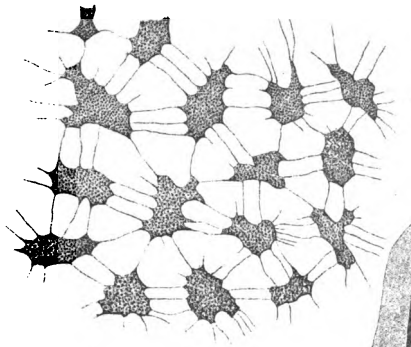
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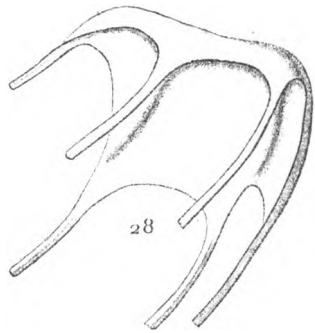
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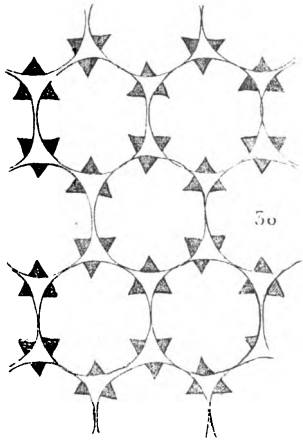
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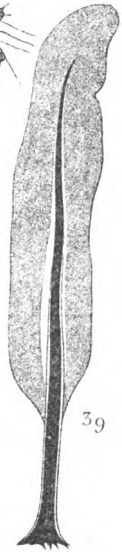
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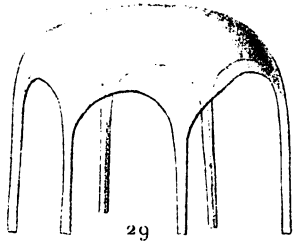
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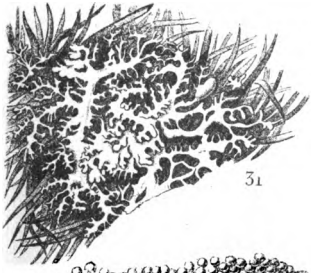
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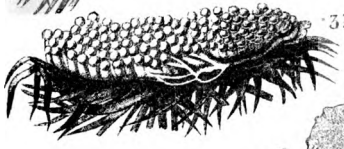
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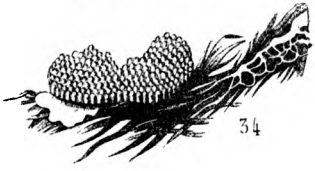
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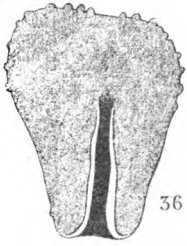
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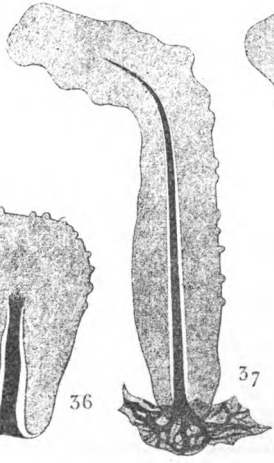
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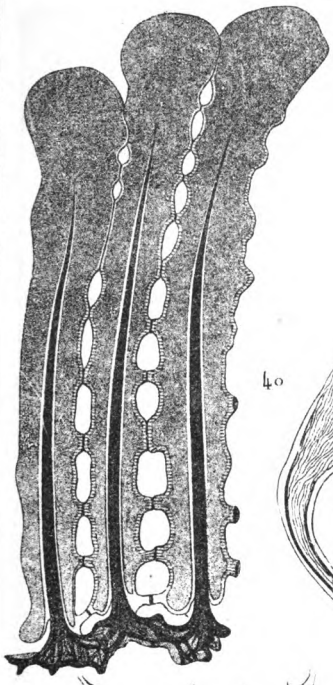

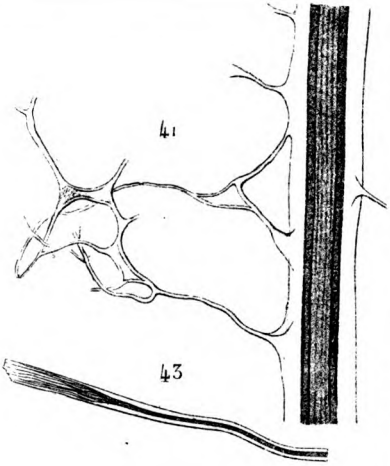

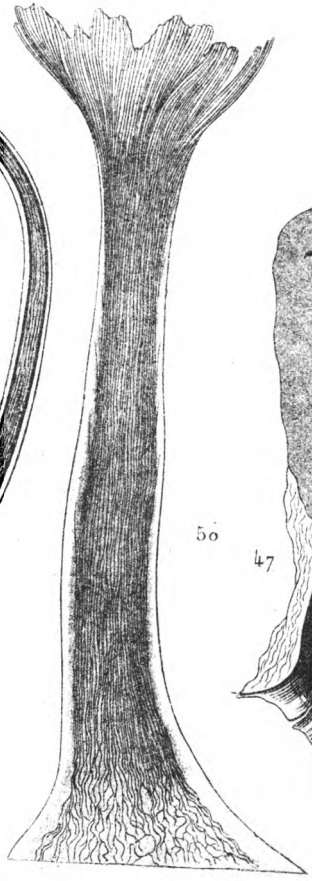

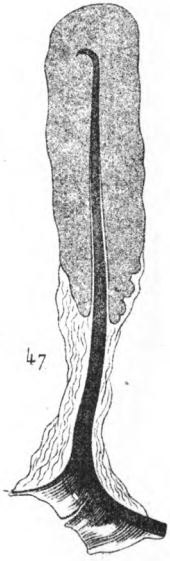

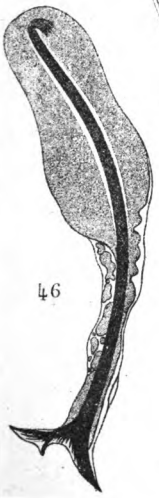

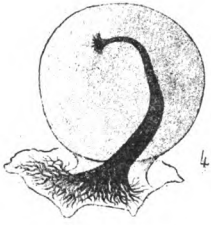

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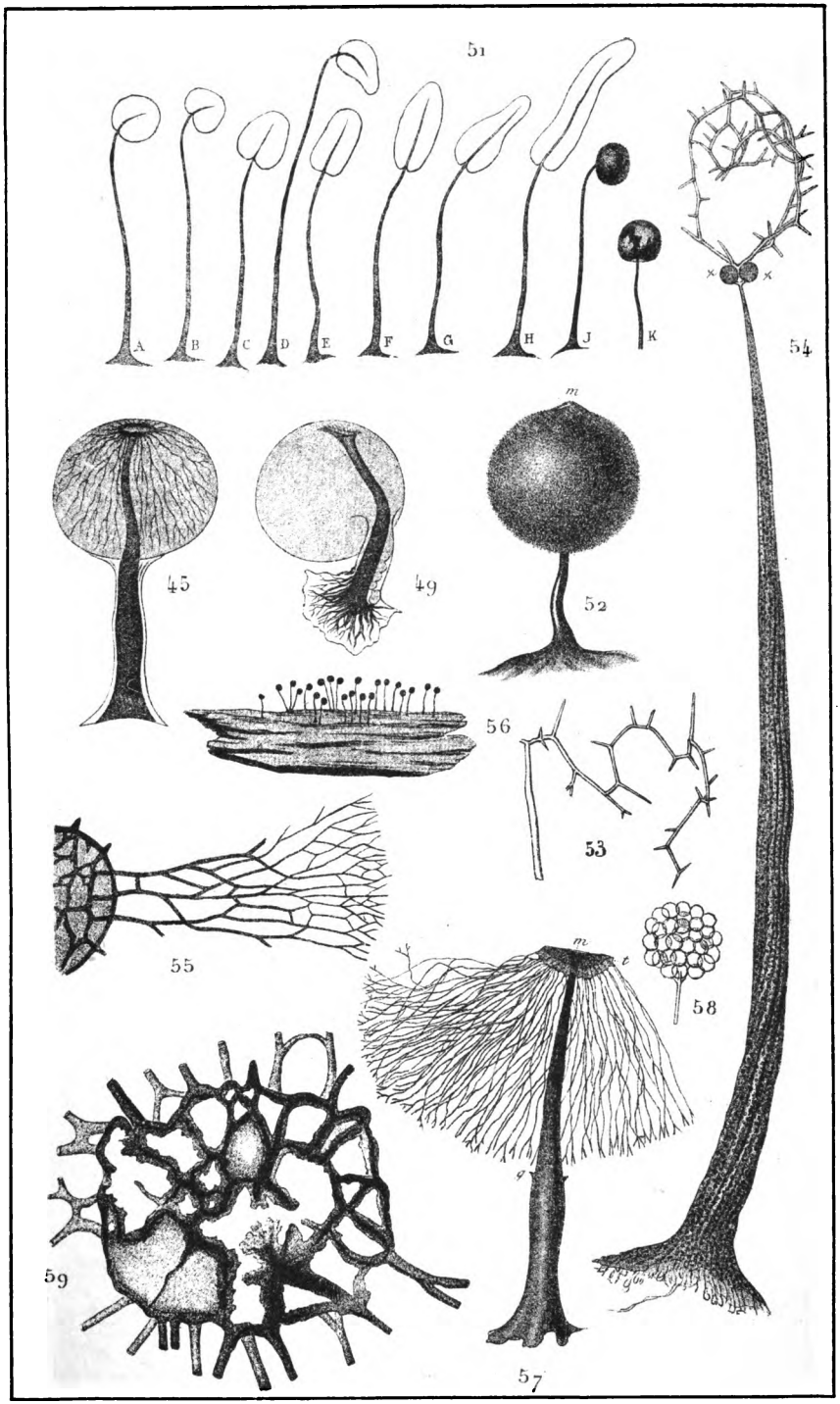

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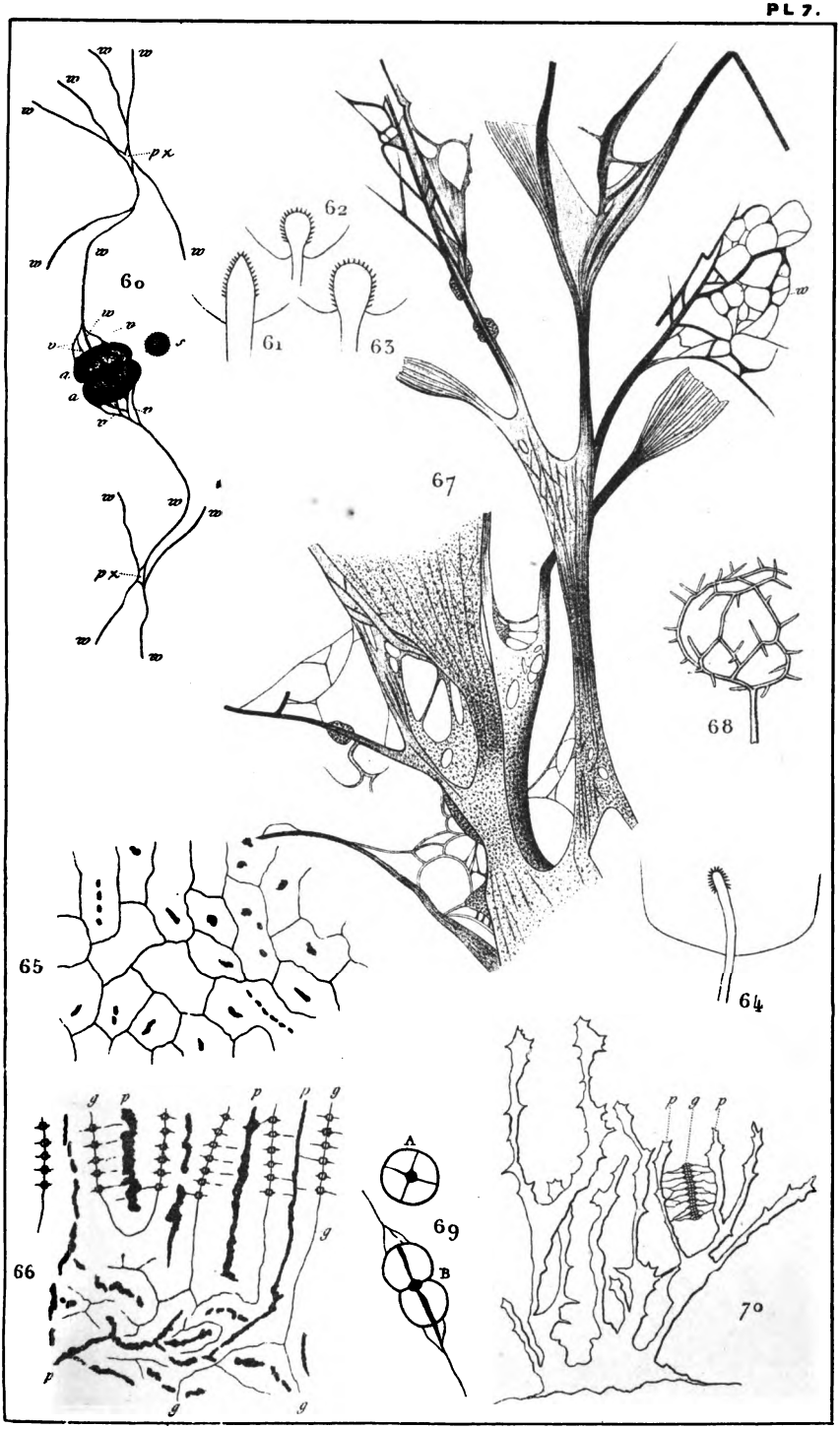

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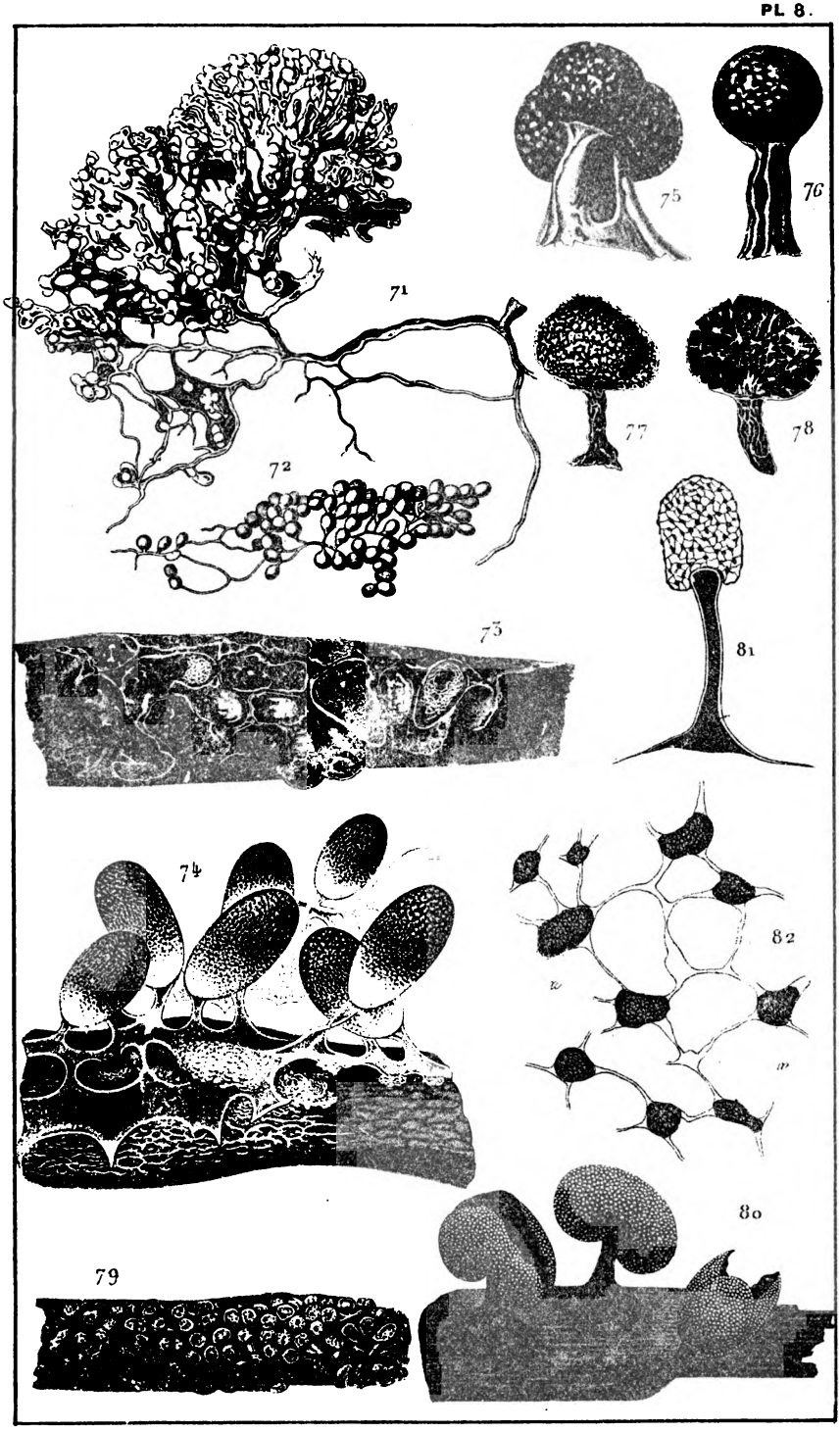

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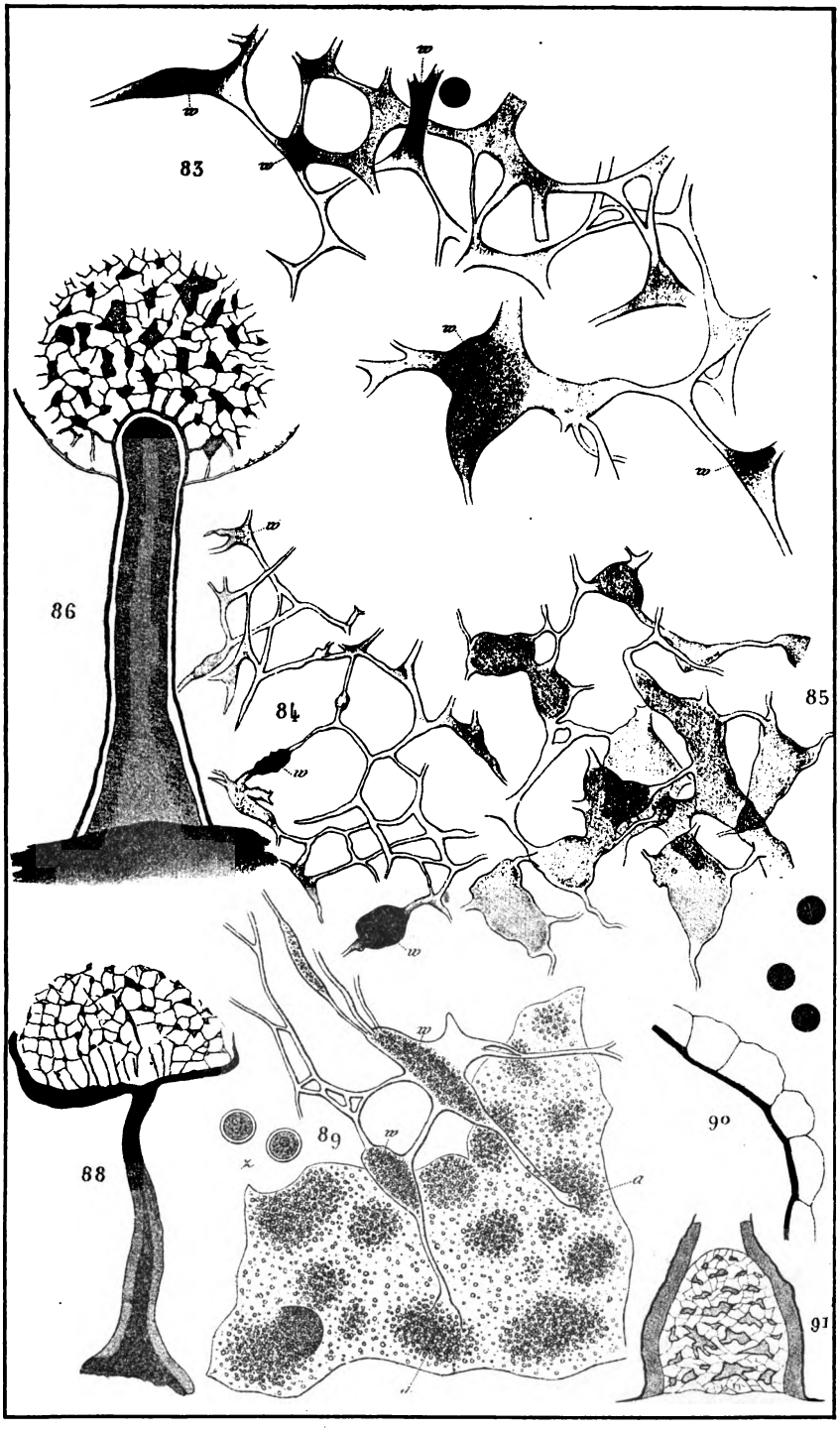

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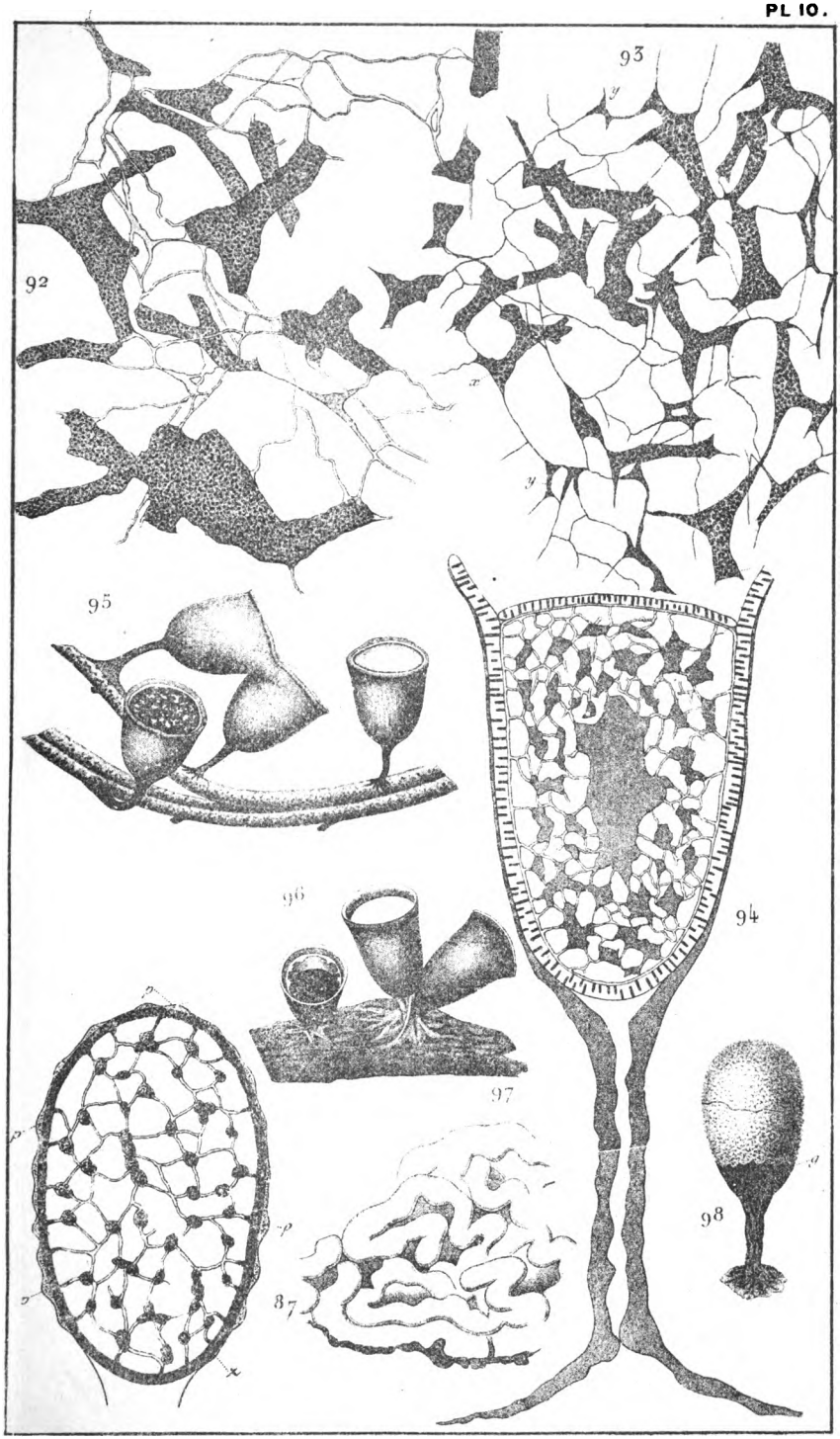

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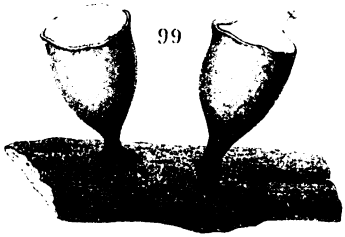

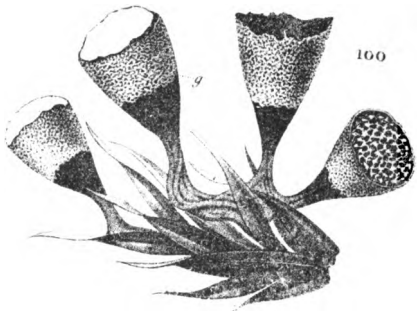

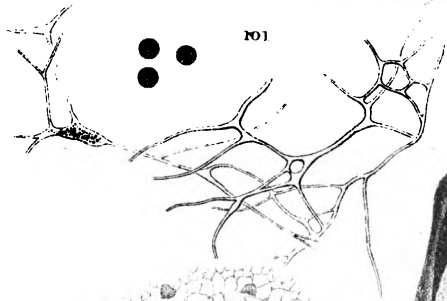

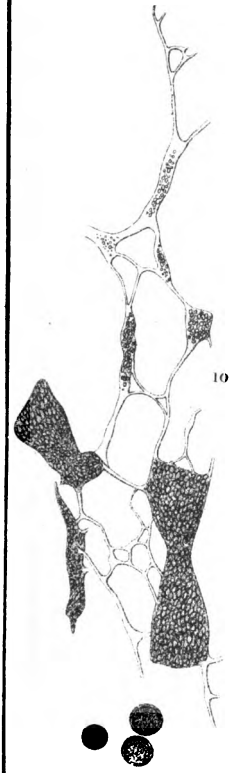

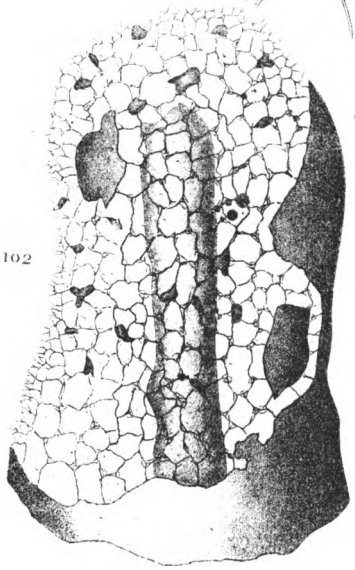

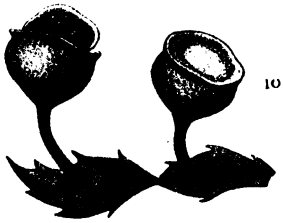

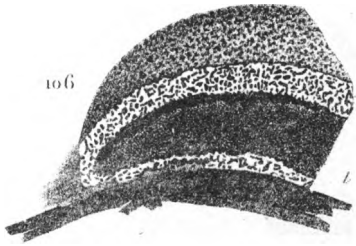

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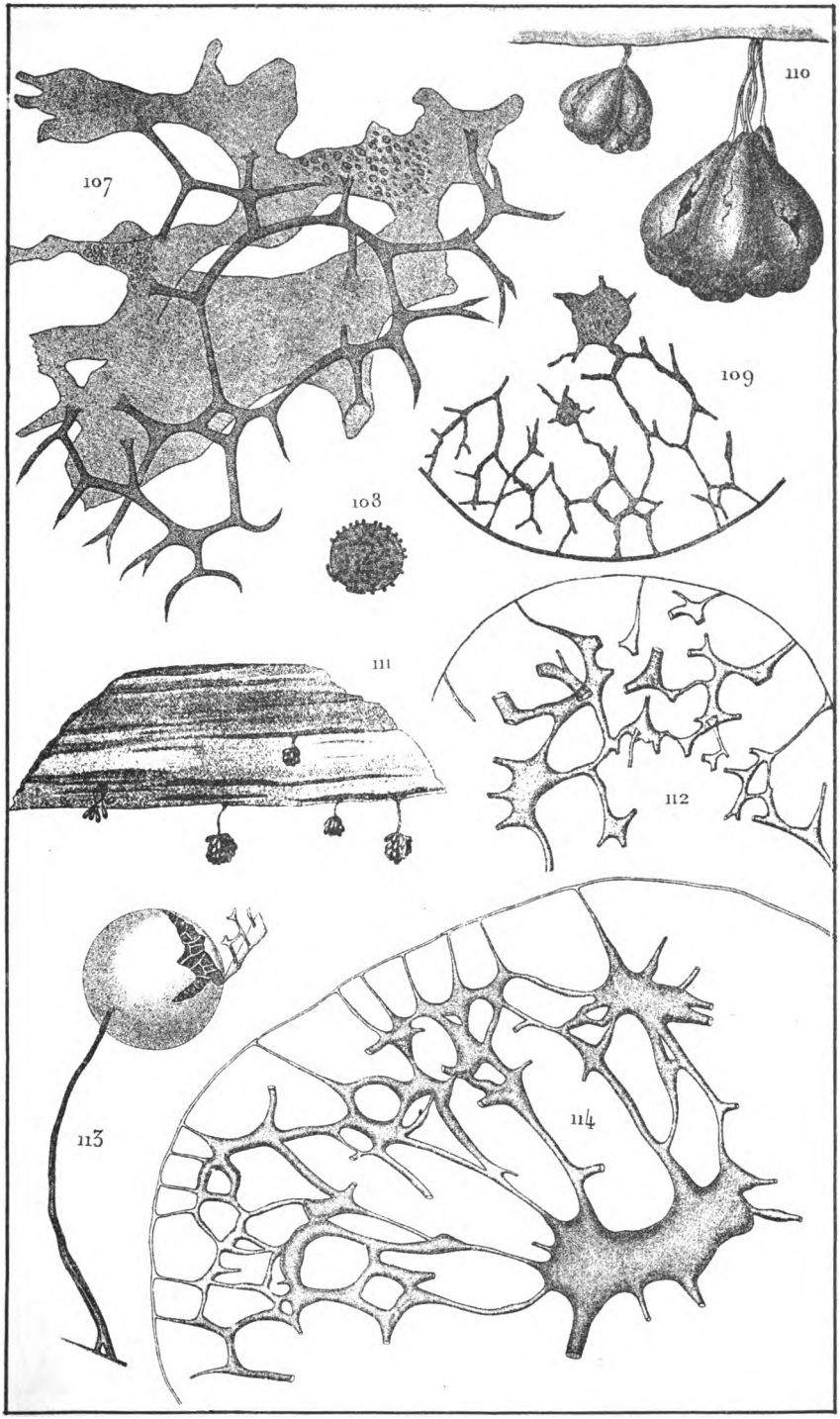

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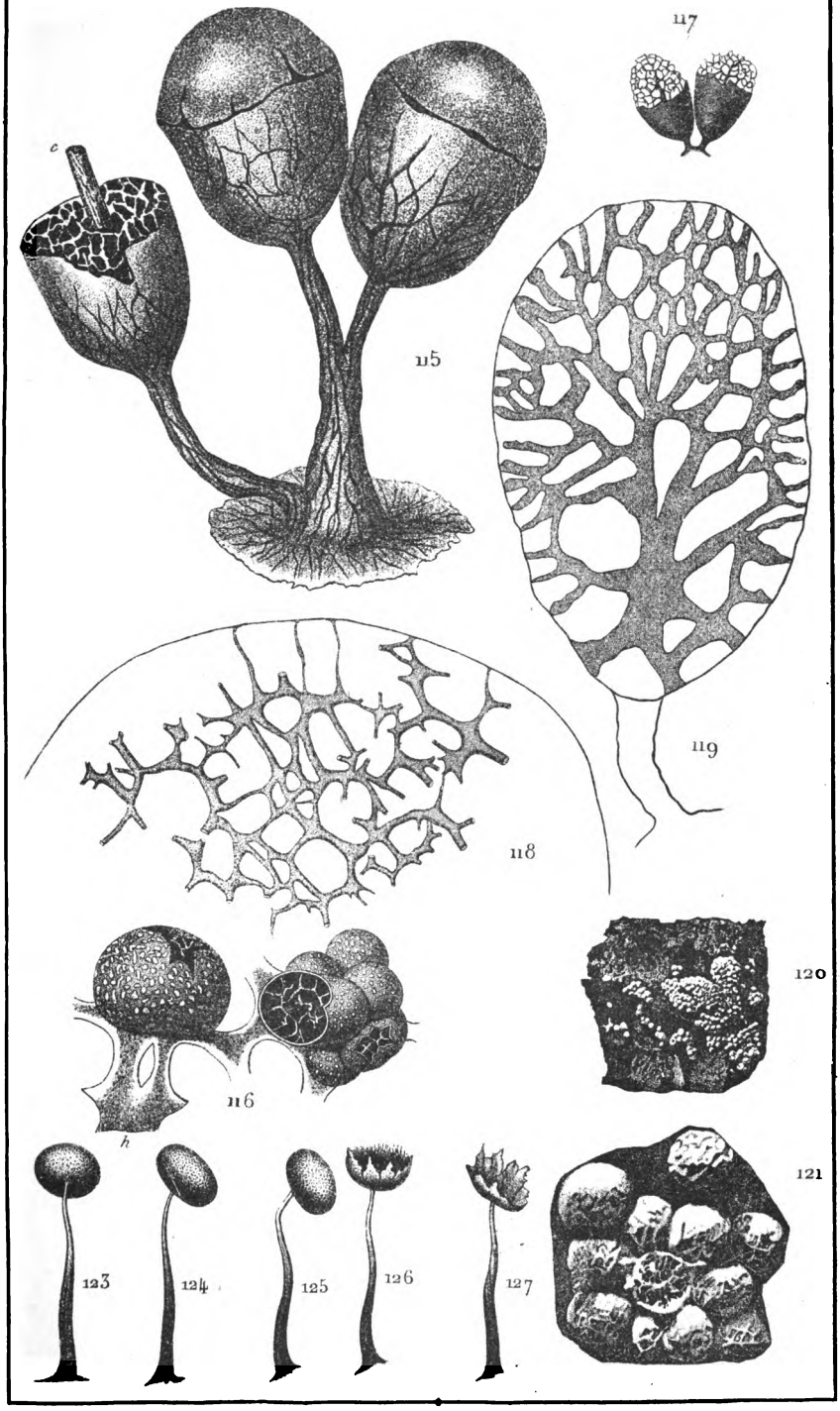

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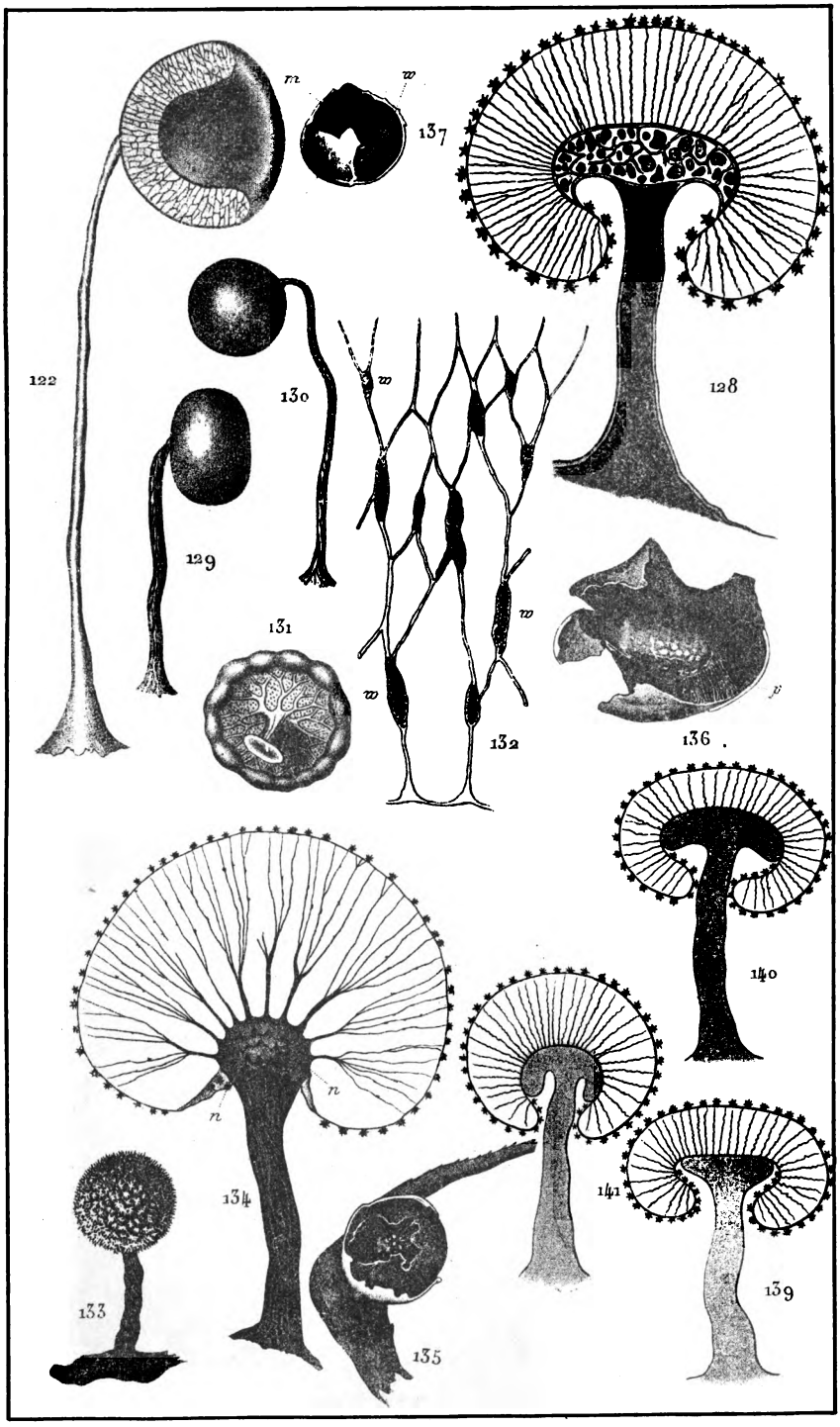

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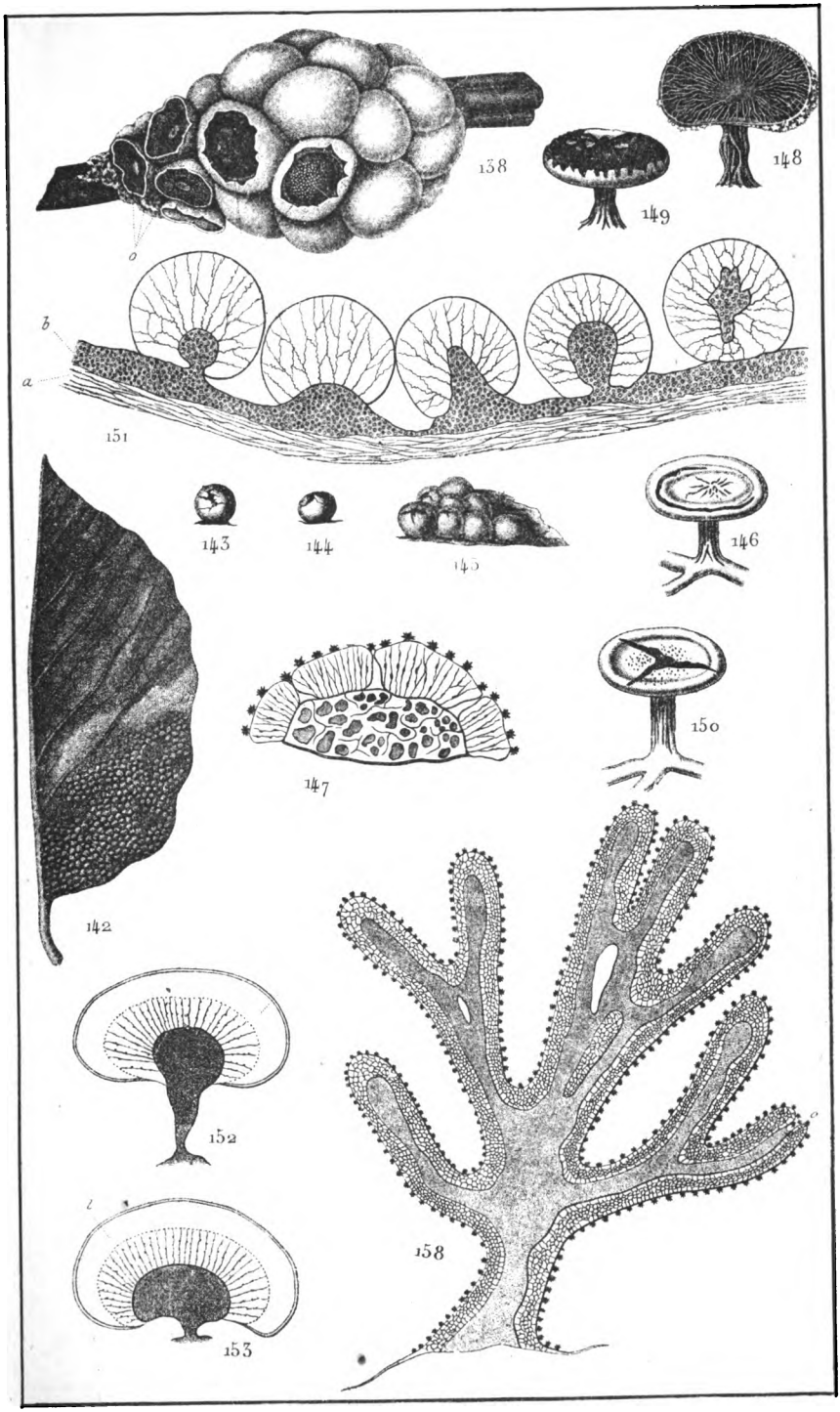

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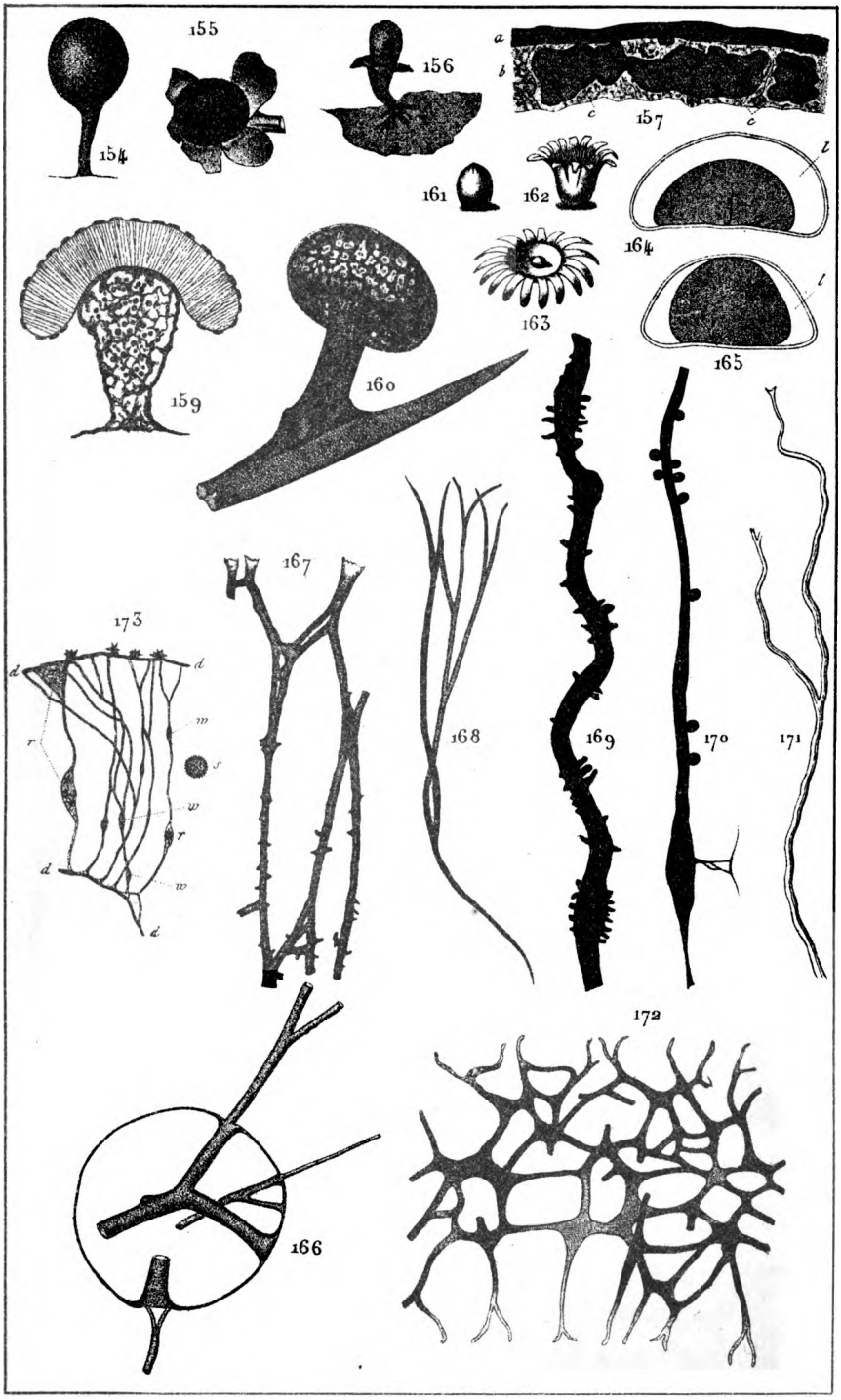

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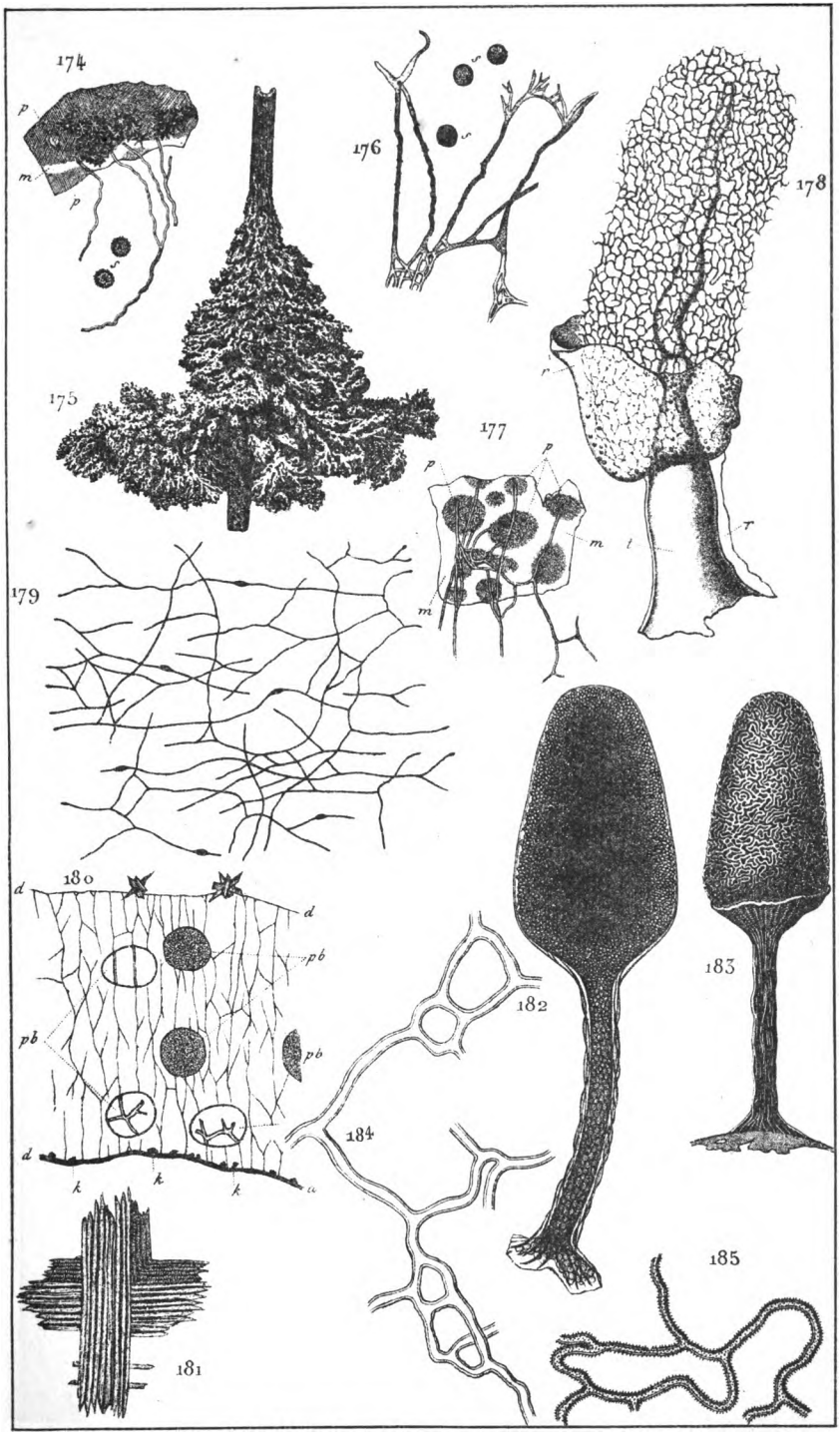

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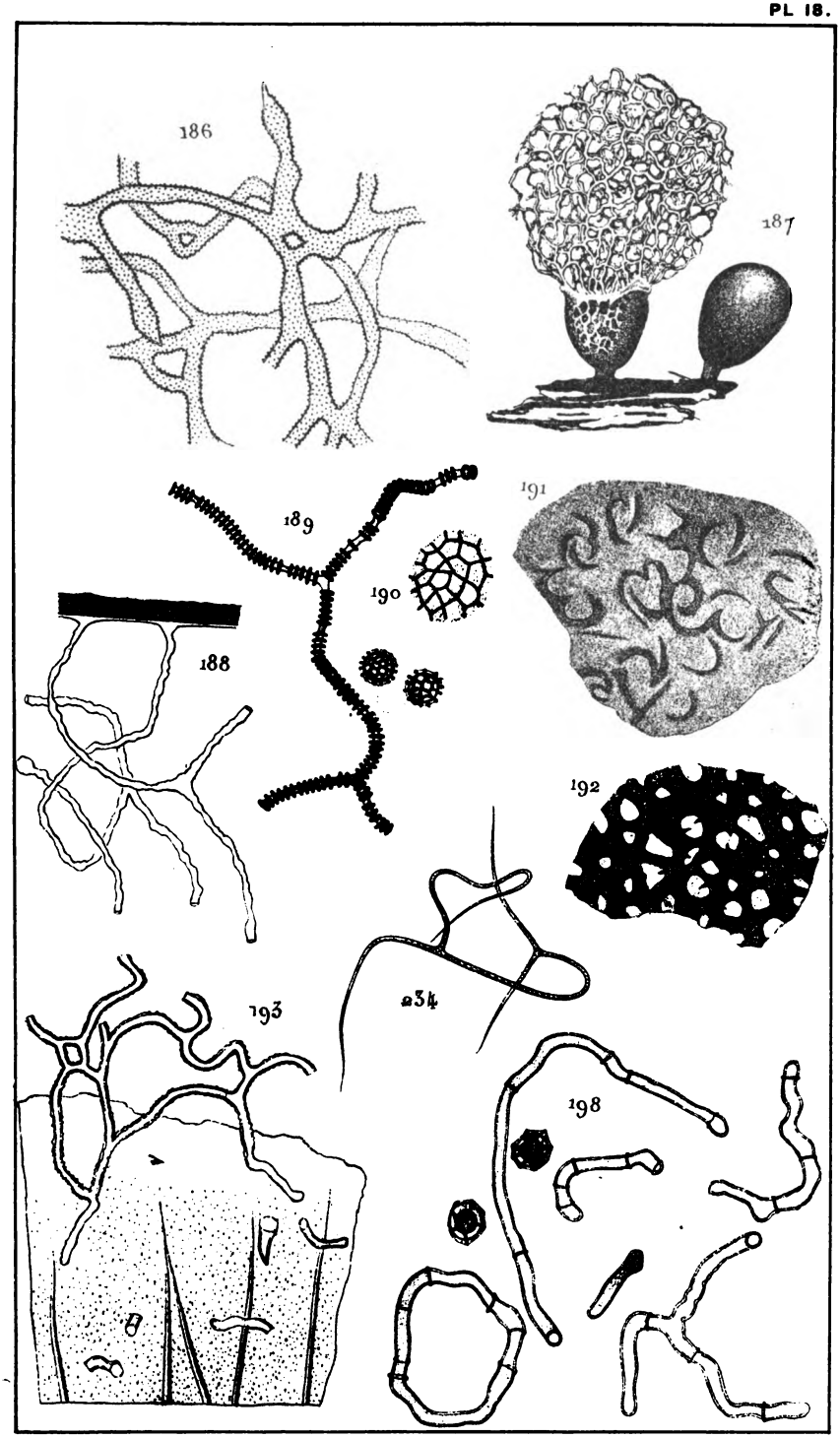

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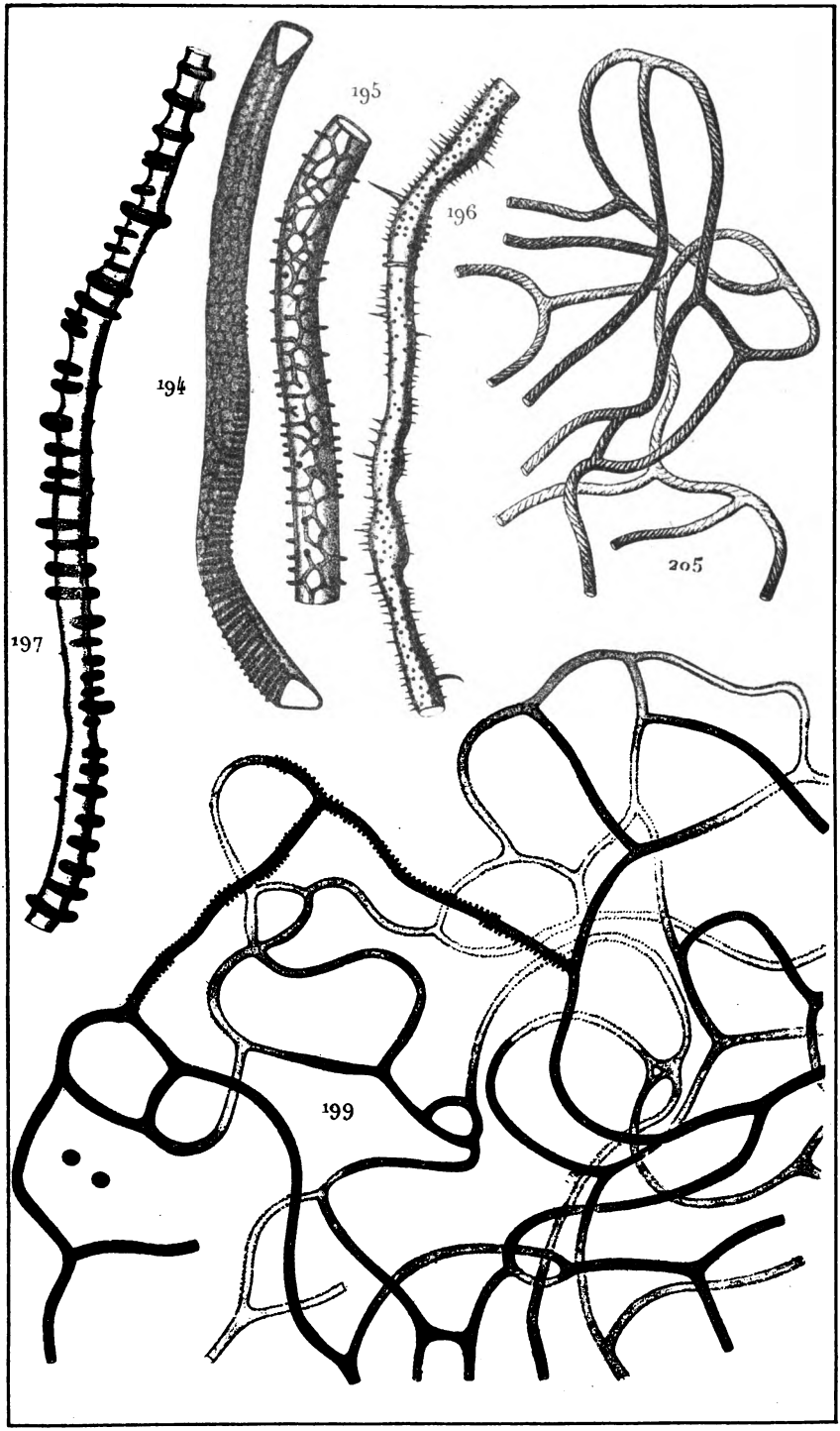

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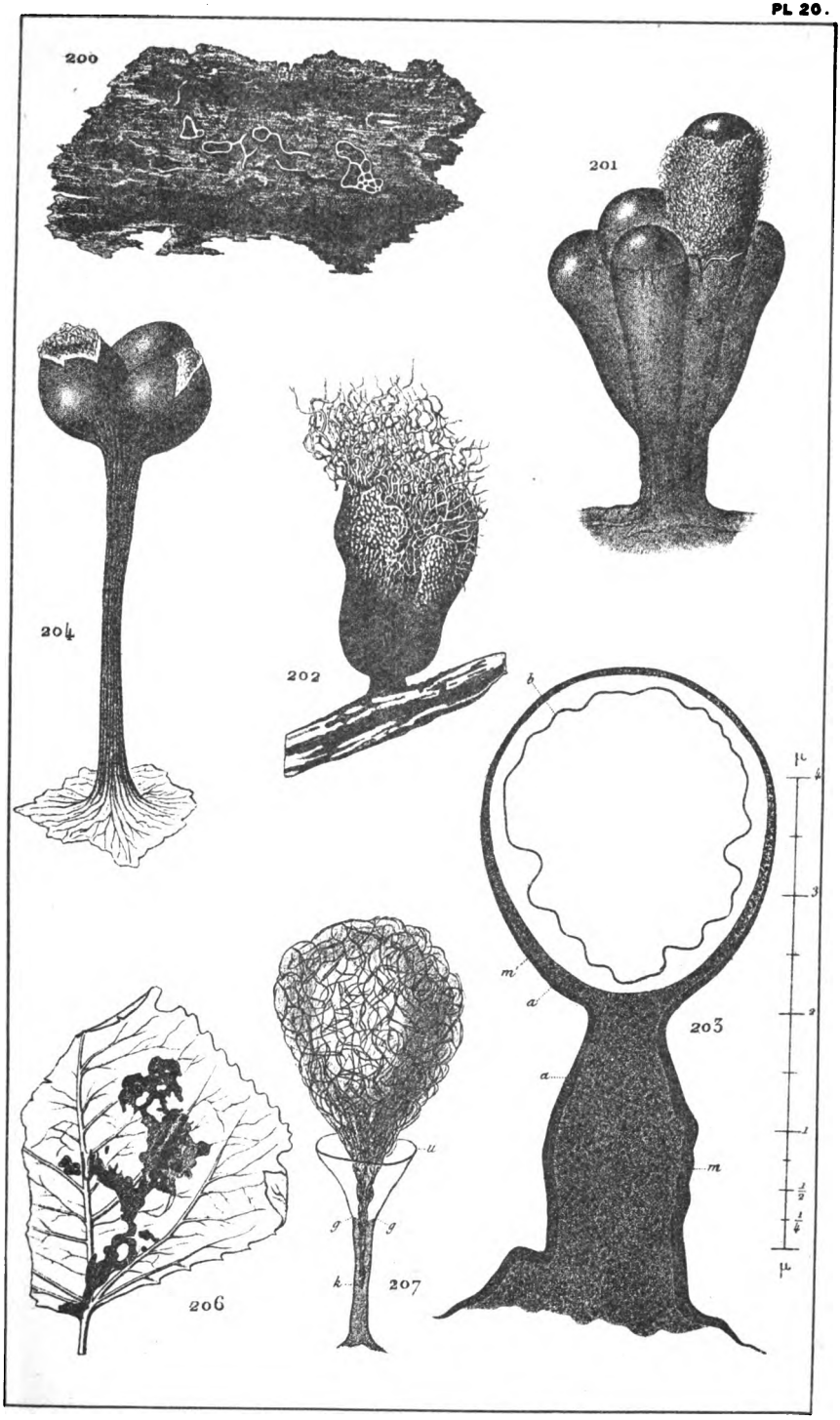

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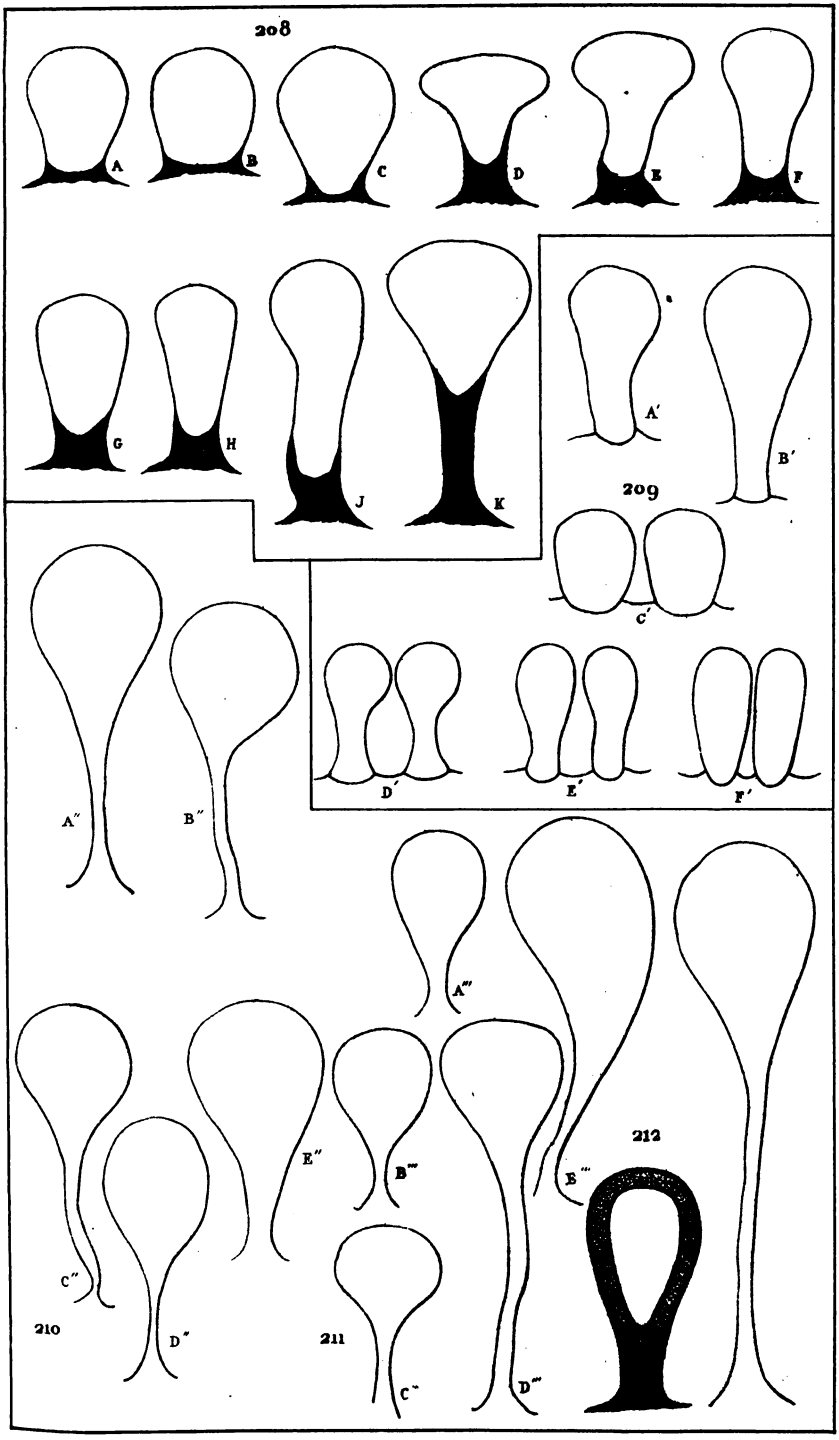

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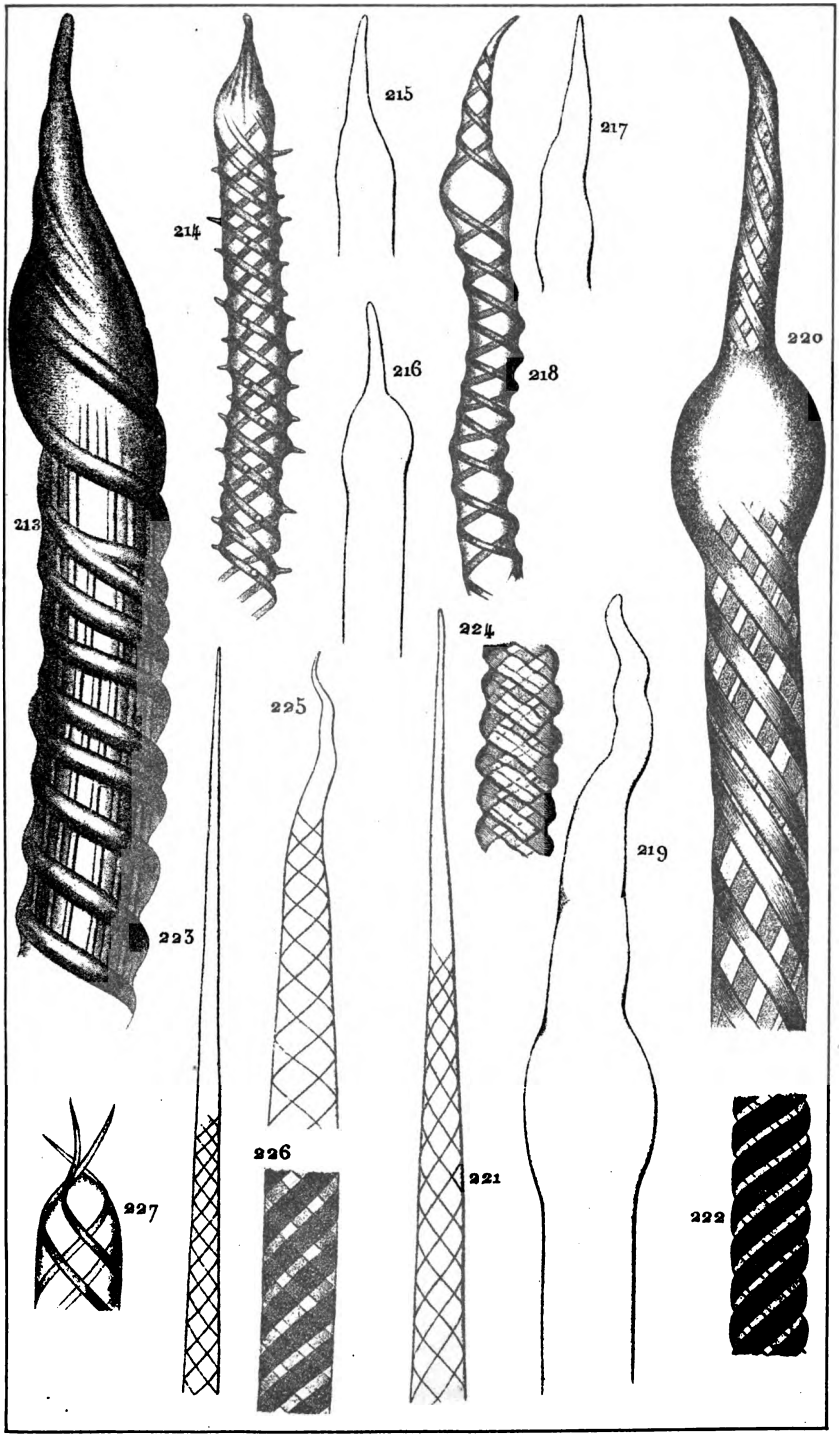

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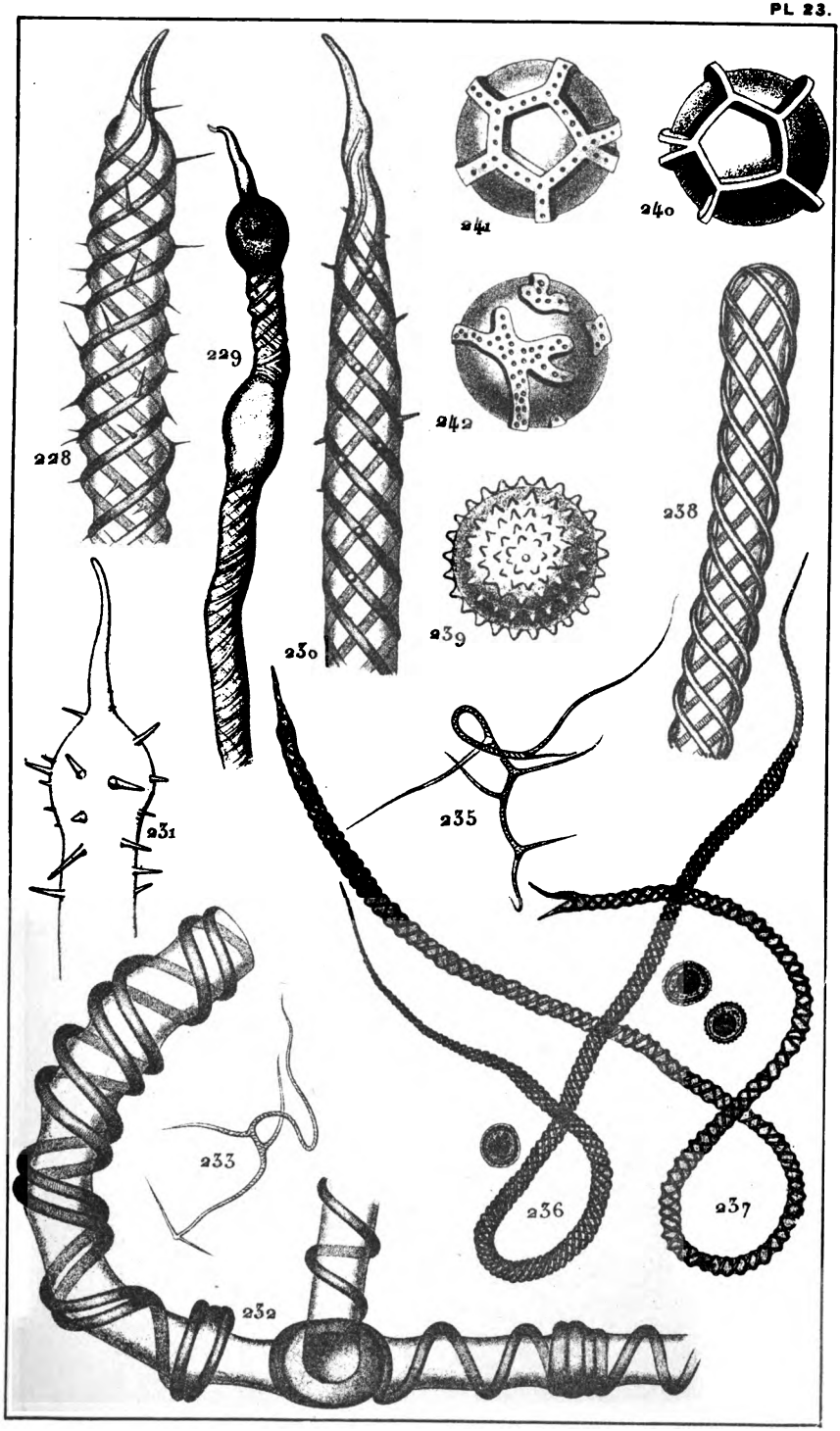

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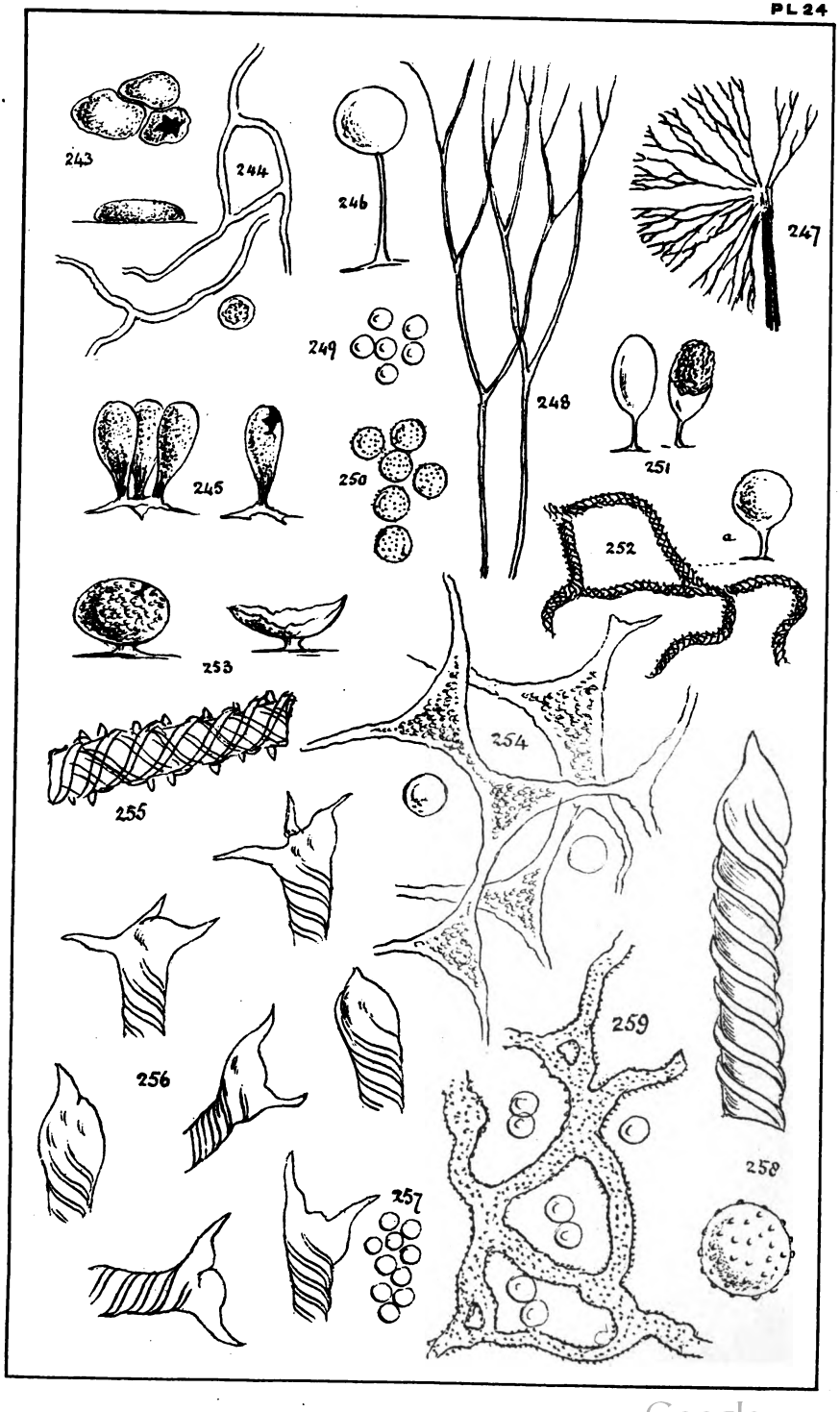

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